S/536/60/000/043/002/011
E193/E483

1.1700 4016, 1416, 1413

AUTHORS: Vishnyakov, D.Ya., Doctor of Technical Sciences, Professor, Figel'man, M.A., Candidate of Technical Sciences and Rutskova, S.V., Engineer

TITLE: Properties of the Heat-Resistant Steel 10Х12НВМФА (10Kh12NVMFA)

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy. No.43. 1960, pp.25-37. Termicheskaya obrabotka i svoystva stali i legkikh splavov

TEXT: The object of the present investigation was to study the effect of mechanical and thermal treatment on the properties of steel 10Kh12NVMFA which is a material combining relatively good corrosion resistance with high strength at room and elevated temperatures. (The composition of this steel is such that it contains no free ferrite; since the strengthening alloying additions, i.e. W, Mo and V, increase the range of the α-phase, steels of this type contain no more than 12 to 15% Cr and 2% Ni.) The experiments were conducted on strip (2 mm thick), possessing the following properties: U.T.S. (σ_b) = 67 kg/mm^2;

0.2 proof stress ($\sigma_{0.2}$) = 47.3 kg/mm^2; elongation (δ) = 19.2%; depth of indentation in the Erichsen test = 11.4 mm; number of bending reversals through 180° = 9. The tensile tests were conducted on test pieces cut from the strip in the direction of rolling. The high-temperature properties were determined by short-time tensile tests, carried out at a rate of strain of 0.1 ℓ/min, where ℓ is the gauge length of the test piece. In the heat treatment experiments, the specimens were hardened by oil- or air-quenching; they were cooled in air after tempering. The fatigue tests were carried out on a machine operating at 1400 to 1500 rev/min, the duration of each test being 10^7 cycles. The results can be summarized as follows. (1) The optimum heat treatment of the steel studied consists in heating it to 900 to 1000°C, quenching in air or oil, and tempering at 500 to 530°C. The mechanical properties of steel, heat treated in this way, are: σ_b = 115 kg/mm^2; $\sigma_{0.2}$ = 105 kg/mm^2; δ = 10%; R_C (Rockwell hardness) = 40. Secondary hardening takes place during tempering at 450 to 500°C but the plasticity of steel is not affected by this change. (2) The effect of temperature on the properties of steel 10Kh12NVMFA is illustrated in Fig.3, where δ and σ_b are

plotted against the test temperature (°C), the continuous and broken curves relating to (a) hardened and tempered and (b) annealed specimens, respectively. (3) The steel under investigation work-hardens quite rapidly, its σ_b increasing to 100 kg/mm^2 and its δ decreasing to 3.5% after 50% cold deformation in flat rolling, the mechanical properties of the steel at high temperatures (up to 600°C) being similarly affected. Full heat treatment (quenching from 900°C and 2 h tempering at 530°C) completely removes the effects of cold plastic deformation. (4) The effects of plastic deformation caused by various fabrication processes can be removed by intermittent annealing at 600 to 700°C. Annealing at higher temperatures is not possible because the steel is liable to harden even when cooled in air. (5) Steel 10Kh12NVMFA is susceptible to stress-corrosion cracking. This was shown by the results of metallographic examination and mechanical tests conducted on specimens, preliminarily heat treated or mechanically polished, and then immersed for 10 min to 10 h in a 50% HCl solution containing 1% of selenium dioxide. (6) Steel 10Kh12NVMFA has good fatigue properties at temperatures of up to 500°C. This is illustrated in Fig.6, where the endurance limit (σ_{-1}, kg/mm^2)

23011

S/536/60/000/043/002/011
Properties of the Heat-Resistant ... E193/E483

of hardened and tempered specimens is plotted against the test temperature (°C). Acknowledgments are expressed to Engineer V.N.Zav'yalov, who participated in this work. There are 6 figures and 4 tables.

Card 4/5

24210
S/148/61/000/001/009/015
A161/A133

18 8200

AUTHORS: Vishnyakov, D. Ya.; Piguzov, Yu. V., and Lei T'ing-ch'üan

TITLE: Temper brittleness of structural manganese steel and the effect of molybdenum on it investigated by the internal-friction method

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 1, 143 - 150

TEXT: Experimental data are presented proving that the temper brittleness in manganese steel is caused by the separation of carbon and nitrogen from alpha solution on dislocations, and that molybdenum inhibits this process. Two steel compositions were studied:

(%)	C	Mn	Mo	Si	S	P	N	O
no. 1	0.42	1.80	-	0.21	0.020	0.013	0.016	0.00020
no. 2	0.40	1.89	0.54	0.14	0.032	0.015	0.019	0.00019

The steel was melted in a high-frequency induction furnace, cast into 37-kg ingots, forged at 1,250°C and annealed at 850°. Impact test specimens were

Card 1/5

cut from square billets and hardened in oil-heat no. 1 at 830°C, heat no. 2 at 890° (which corresponds to the Ac_3+50° point). Part of the quenched specimens were tempered at 350 - 650° (with 50° intervals) with 2 hours soaking. Half of these specimens were rapid-cooled (in water), half of them slowly (in the furnace). Other specimens were tempered at 650°, cooled rapidly (producing a tough state), then part of them was embrittled by holding at 500° for 12 hours. Rods of annealed steel 6 mm in diameter were drawn with intermittent annealings (650°, 1 hr) in a vacuum furnace to 0.8 mm diameter, and this wire annealed in a vacuum at 850°C for 2 hrs. The 0.8 mm diameter and 115 mm long specimens were heated at Ac_3+50° (5 min) inside austenite steel pipes, and cooled in oil. This quenching method protected the specimens from decarbonizing. The internal friction and the shear modulus were measured simultaneously in a РКФ-МИС (RKF-MIS) vacuum relaxator at a frequency of 1 c that had been described previously [Ref. 9: Yu. V. Piguzov, V. S. Postnikov. ПС-55-448 (PS-55-448) instruments and stands. ITEI, 1955] using a method that made the experiment data comparable. This method had been described in two publications: Ref. 10: Yu. V. Piguzov, L. S. Fedotova, M. F. Alekseyenko. Trudy konferentsii po relaksatsionnym

Temper brittleness of structural manganese steel...A161/A133

yavleniyam v chistykh metallakh i splavakh (Proceedings of the conference on relaxation phenomena in pure metals and alloys), Metallurgizdat, 1960; Ref. 11: Yu. V. Piguzov, M. I. Bayazitov. Izv. vyssh. uch. zavedeniy. Chernaya metallurgiya, 1960, no. 3. A drop of impact resistance was found in no. 1 steel in the 450 - 550°C range (Fig. 1, a). The addition of 0.54% Mo raised the impact resistance after tempering at 350 - 550°C and reduced it after tempering at 650°C (this phenomenon was noticed in a previous investigation, too). The presence of Mo in steel (as in no. 2) completely eliminated the difference in impact resistance after different coolings from the tempering temperature (Fig. 1, b), but a general decrease of impact resistance at 500 - 600° tempering was noticeable. Conclusions: 1) Structural manganese steel (0.4% C, 1.8% Mn) tends to temper brittleness both at slow cooling after high-temperature tempering and after embrittlement (500°C, 12 hrs). The addition of 0.54% Mo had a high reducing effect on this tendency. 2) The internal-friction method is well suited for studying the temper brittleness phenomenon and its nature. The physical mechanism of temper brittleness in manganese steel revealed by the method consists in the liberation of carbon (and nitrogen) from the solid α-solution (due to different solubility at different temperatures) on dislocations

Card 3/5

24210

S/148/61/000/001/009/015

Temper brittleness of structural manganese steel...A161/A133

(mainly on the boundaries of grains and blocks), which prevents plastic deformation preceding rupture, i.e. makes rupture brittle. Molybdenum inhibits the liberation of interstitial atoms from α-solid solutions and thus effectively reduces the tendency to temper brittleness in manganese steel. There are 7 figures and 11 references: 9 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: E. Klier. Tr. A.S.M., 43, 1951, 935; Lo-ching Chang. J. Mech. Physics of solids, 3, 1955, 212.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: March 14, 1960

Card 4/5

S/536/61/000/050/001/017
D217/D305

AUTHORS: Vishnyakov, D.Ya., Doctor of Technical Sciences, Professor and Sovalova, A.A., Candidate of Technical Sciences, Docent

TITLE: Influence of tungsten, niobium and zirconium on the stability of austenite and the hardenability of chromium-nickel steels for machine construction

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institute. Trudy, No. 50, 1961, Voprosy metallovedeniya, 5-16

TEXT: The mechanical properties of medium sized components made from Cr-Ni-Mo steel 40ХНМА (40KhNMA) which has a relatively low alloy content, are not inferior to those of more highly alloyed Cr-Ni steels. However, the former contains expensive Mo which it is desirable to replace with other elements capable of reducing the tendency to secondary temper brittleness and of increasing the hardenability of the steel. The elements, W, Nb, Zr and Ti in various proportions can be considered

Card 1/4

for this purpose. Ingots, weighing 40 kg, of 40KhN-type steel alloyed with Mo, W, Nb and Zr in different proportions, were made. The chemical composition of these steels is shown in Table 1. The critical points of the steels were determined, martensite curves plotted and the kinetics of isothermal transformation were studied by means of S-curves. The hardenability was then studied by means of the Jominy test. Engineers N.A. Kozlovai and E.Ya. Vel'mozhnyy participated in the experimental work. It was found that the alloying elements W, Nb and Zr have virtually no influence on the temperatures of the critical points of the steel 40KhNM. Mo depresses the critical points on heating to a somewhat greater extent than the other elements. The M_s points of the steels investigated are within the temperature range 270-300°C. The S-curves plotted for steels 40KhN, 40KhNMA and 40KhN containing Nb, Zr and W reveal complications in the kinetics of isothermal transformation of austenite. The austenite of steel 40KhN is practically equally stable in the pearlitic and troostitic regions. Addition of the strong carbide-forming elements Mo, W, Zr and Nb changes the kinetics of isothermal

Influence of tungsten ...

transformation of austenite. The stability of austenite in the troostitic region becomes no less than in the pearlitic. On raising the temperature of preliminary heating from 830-850 C to 1050 C, the S-curve shifts to the right in all cases, and the stability of austenite in the pearlitic region increases 5-15 times. In the troostitic region it increases only to an insignificant extent. Investigation of the hardenability of the steels has shown that those containing Mo, Zr and W possess a high hardenability in cross sections of more than 200 mm diameter. Steel 40KhN and that containing Nb possess a limited hardenability. There are 11 figures, 3 tables and 4 Soviet-bloc references.

Card 3/4

Melt No

Chemical Composition, % TABLE

№ плавки	Химический состав в % C	Cr	Ni	Mo	W	Nb	Zr	Mn	Si	P	S
1	0,43	0,72	1,50	—	—	—	—	0,65	0,28	0,019	—
2	0,38	0,84	1,35	0,27	—	—	—	0,74	0,31	0,016	0,027
3	0,44	0,77	1,35	—	0,48	—	—	0,53	0,26	0,016	0,030
4	0,41	0,77	1,40	—	—	0,46	—	0,50	0,26	0,016	0,034
5	0,43	0,70	1,70	—	—	—	0,30	0,50	—	0,021	0,028

Card 4/4

S/536/61/000/050/002/017
D217/D305

AUTHORS: Vishnyakov, D.Ya., Doctor of Technical Sciences, Professor, Sovalova, A.A., Candidate of Technical Sciences, and Chudareva, L.P., Engineer

TITLE: Case hardening of stainless steels

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, No. 50, 1961, Voprosy metallovedeniya, 17-27

TEXT: Processes for the case hardening of the stainless steels 2Х13 (2Kh13), Х17Н2 (Kh17N2), 13Х14НВФРА (ЭИ 736) ((13Kh14NVFRA (EI736)) and 13Х12НВМФА (ЭИ961)(13Kh12NVMFA (EI961)) have been developed during the last few years and have since found wide application. The case hardening of the above steels is best carried out in a gas carburizer at 950-1000°C for 5-15 hours. As a gas carburizer is not always available in factories, the development of methods of pack-carburizing stainless steels is of considerable interest. The authors' initial experiments in this direction were unsuccessful, as the depth and carbon

Card 1/ 3

Case hardening ...

concentration of the diffusion layers obtained proved to be variable. The main reason for this variation was the ready formation of strong oxide films on the surface of the stainless steels. The purpose of the present investigation was to develop a satisfactory case hardening process for these steels, using solid carburizing media, by using a more active carburizing medium and by preventing formation of oxide film on the steel surface. Protective pastes or graphite were applied to the ground or etched surfaces by immersing the specimens in an aqueous emulsion thereof; this yielded a layer of 2-3 mm thickness. After drying, the specimens were packed in the respective carburizing media, together with other specimens free from protective pastes, for comparison purposes. Chemico-thermal treatments were given to the steels 2Kh13, Kh17N2 and 13Kh12NVMFA, using protective pastes and various carburizing media at various temperatures and soaking times. The authors conclude that case carburizing of stainless steels using solid carburizing media is possible, and recommend the following composition for a carburizing medium (parts by wt.): (1) 50 charcoal, 50 $BaCO_3$ and 1 Na_2CO_3; (2) 50 wood charcoal,

Card 2/3

75 $BaCl_2$, 3 NaCl and 15 $K_4Fe(CN)_6$; (3) 3 wood charcoal, 50 $BaCO_3$ and 5 NH_4Cl. To protect a stainless steel surface against the formation of oxide films during heating to carburizing temperatures, greasing with graphite or a paste consisting of 45 parts by wt. ivory black, 20 parts by wt. $BaCO_3$, 20 parts by wt. Na_2CO_3 and 15 parts by wt. $K_4Fe(CN)_6$ is recommended. Cementation should be carried out at 950 or 10000°C. Raising the temperature accelerates diffusion and enables the processing time to be somewhat reduced. Increasing the period of chemico-thermal treatment leads to an increase in the thickness of the layer. The optimum thermal treatment consists of oil quenching from 1000°C and cold working at 60-70°C with subsequent low temperature tempering at 150-170°C. Such treatment results in a surface hardness of 62-66 Rockwell C. There are 8 figures, 5 tables and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

S/536/61/000/050/003/017
D217/D304

AUTHORS: Vishnyakov, D.Ya., Doctor of Technical Sciences Professor, and Paisov, A.I., Engineer

TITLE: Nature of the intercrystalline brittleness of technical iron in the cold state

SOURCE: Moscow. Aviatsionnyy. tekhnologicheskiy institut. Trudy, No. 50, 1961, Voprosy metallovedeniya, 28-36

TEXT: In order to elucidate the nature of brittleness, i.e. the mechanism of the influence of oxygen on the ductile/brittle transition temperature of iron, an investigation was carried out using four melts of technical iron, containing 0.026-033% c, 0.021-0.040% Mn, traces of Si, 0.027-0.030% S, 0.009-0.010% P and 0.043-0.068% O_2. The iron was melted in industrial open hearth furnaces, cast into ingots of 750 kg and rolled into billets and then into sheet of various thicknesses (2-4 mm). The sheets were annealed at 780°C and cut into specimens.

Card 1/2

The latter were annealed in a laboratory furnace at 920°C or at 875°C for 2 hours, furnace-cooled to 600°C and finally cooled in air. A metallographic investigation of sections etched for 2-3 minutes in a saturated alcoholic solution of picric acid was carried out. The distribution pattern of cracks produced in brittle specimens by fracturing them was also studied. Finally, the condition of the grain boundaries in iron in the brittle and ductile states was investigated under an electron microscope. The brittle fractures were studied in the unetched condition. It was found that microscopic inclusions and precipitates along the grain boundaries are not responsible for the intercrystalline brittleness of technical iron. The brittleness is the result of intercrystalline adsorption of dissolved oxygen which leads to a weakening of the grain boundaries. There are 9 figures and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: A. Seybolt, Journal of Metals, 1954, Sept.

VISHNYAKOV D YA

S/536/61/000/050/004/017
D217/D304

AUTHORS: Vishnyakov, Doctor of Technicall Sciences, Professor, and Paisov, A.I., Engineer

TITLE: Susceptibility of low-carbon electrical engineering steel to magnetic ageing and methods used for estimating this tendency

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy; No. 50, 1961, Voprosy metallovedeniya, 37-41

TEXT: The low carbon electrical engineering rimming steel A contains not more than 0.025% C, 0.025% Si, 0.035% Mn, 0.030% S, 0.015% P and 0.030% Cu. However, the N_2 and O_2 contents are high (up to 0.02% and 0.1%, respectively). This steel exhibits a tendency to magnetic ageing, which is of great practical interest in the temperature range 100°C and below. Prolonged soaking at 50-100°C leads to a considerable increase in the coercive force of this steel. The energy of activation of the

Card 1/3

Susceptibility of low-carbon ...

process of growth of the coercive force in the temperature interval investigated is 16,000±1500 cal/mol. This figure agrees fairly well with the energy of activation for the diffusion of nitrogen in α-iron (18,000 cal/mol.). After prolonged ageing at 100°C, a fine dispersion of precipitates and some relatively coarse needles become visible under the microscope. An examination under greater magnifications has shown that the fine precipitates too are acicular. The fine needles in each grain have not more than three orientations. A comparison of above microstructures with the results of L.J. Dijkstra (J. of Metals, 1949, v. 1, N 3) permits the assumption that the fine precipitate represents the metastable nitride $Fe_{16}N_2$ (tetragonal lattice, axial ratio c/a = 1.1; the plate-like precipitate of this nitride is situated along the (100) planes of α-iron, and hence the cross section of the needle-shaped precipitates has in each grain not more than three orientations), and the coarse precipitate is the stable nitride Fe_4N. In the case of ageing at 100°, it can be assumed that the increase in coercive force is

Card 2/3

Susceptibility of low-carbon ...

determined only by the precipitation and coalescence of the metastable nitride $Fe_{16}N_2$. From the results of tests at 100°, the magnetic ageing at lower temperatures can be estimated approximately by means of a formula

$$\ell g \frac{\tau_1}{\tau_2} = 3500 \left(\frac{1}{T_1} - \frac{1}{T_2} \right),$$

where τ_1 and τ_2 are equivalent periods of ageing at the temperatures T_1 and T_2, respectively. The tendency of the steel to magnetic ageing can be estimated from the absolute increase in coercive force. There are 3 figures and 4 references: 1 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: L.J. Dijkstra, J. of Metals, 1949, v. 1, no. 3; K.H. Jack: Proc. of the Royal Soc., Series A, 1951, v. 208, no. 1092; G.R. Booker, J. Norburg, A.I. Sutton, J. of the Iron and Steel Institute, 1957, v. 187, no. 3.

Card 3/3

S/536/61/000/050/005/017
D217/D304

AUTHORS: Vishnyakov, D. Ya., Doctor of Technical Sciences, Professor, Figel'man, M.A., Candidate of Technical Sciences, and Nazarov, G.I., Engineer

TITLE: Isothermal heat treatment of the steel 13Х12НВФМА (13Kh12NVFMA)

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, No. 50, 1961, Voprosy metallovedeniya, 42-51

TEXT: The study of the suitability of the above steel for isothermal heat treatment was undertaken with a view to reducing warping of thin shaped components and of improving their machinability by cutting. Using specimens made from steel rods of 40 mm diameter, the temperatures of the critical points of the steel were determined by means of a differential optical dilatometer. The M_s point was determined by means of a magnetic anisometer, by fixing the instant at which the magnetic phase appeared, both at a constant temperature during soaking in a thermostat,

Card 1/3

Isothermal ...

and under conditions of fixed-rate cooling of the specimen in air, with a thermocouple soldered on to it. The proportion of residual austenite after various heat-treatments and after treatment in the cold was determined by means of the magnetic anisometer. The kinetics of the isothermal decomposition of supercooled austenite were investigated by means of hardness tests and microstructural analysis. The isothermal treatment consisted of heating the steel specimens to 1000°C, holding them for 30 minutes in potassium nitrate at 220°C (i.e. the M_s point) and at 320°C (i.e. above the M_s point), followed by cooling in air and finally tempering at 500°C and 600°C. Since components made of the steel investigated are usually subjected to elevated temperatures in service, the stress to rupture of conventionally heat treated specimens was compared with that of isothermally treated ones. The tests were carried out at 600°C at a load of 27 kg/mm^2. The resistance to scale formation was estimated from the gain in weight of cylindrical specimens with ground and sand-blasted surfaces after soaking at 600°C for 25, 50 and 100 hours. The machinability of conventionally and isothermally treated

Isothermal ...

specimens was also studied. It was found that the steel investigated is somewhat stronger after isothermal treatment than after conventional heat treatment, consisting in quenching and tempering. The impact resistance is practically identical after both treatments. The increased strength imparted to the steel by isothermal treatment is retained up to 500°C. Isothermal treatment ensures a higher resistance to scale formation in the case of rough machined specimens, but has no advantage in the case of fine-finished (e.g. ground) specimens. The corrosion resistance of the steel is independent of the nature of its thermal history (within the limits of the procedures investigated), and is determined mainly by the method of surface treatment. The finer the machining, the higher will be the corrosion resistance. Heating after severe grinding reduces the corrosion resistance of the steel. The optimum conditions for cutting the above steel are attained by normal heat treatment with oil quenching and isothermal treatment (soaking at 320°C). There are 5 figures and 6 tables.

Card 3/3

S/148/62/000/011/010/013
E079/E151

AUTHORS: Vishnyakov, D.Ya., and Lei T'ing-ch'uan

TITLE: Some special features of the isothermal transformation of austenite in the intermediate range

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no.11, 1962, 163-169

TEXT: The following were studied by magnetometric and metallographic methods: the kinetics and structure of the products of the intermediate austenite transformation of structural manganese steels; the influence of alloying elements on the transformation; the conditions of auto-inhibition of the process and of the superimposition of the secondary pearlite transformation. The composition of steels studied was: 0.40-0.42% C; 1.80-1.96% Mn; 0.14-0.21% Si; 0.019-0.032% S; 0.013-0.015% P; one specimen also contained 0.54% molybdenum, and another 0.48% Mo and 0.17% Ti. It was found that for manganese steel the upper limit of the intermediate range in which the decomposition of austenite begins with the formation of a feather-like α-phase, on which the process of separation of secondary pearlite is then

Card 1/2

superimposed, lies in the range 490-550 °C. Alloying with Mo results in two minima for the stability of austenite (580 and 430 °C). The stability of austenite in the pearlite range is strongly increased, and alloying with Ti increased still more the stability of austenite in the pearlite range. Isothermal transformation in the upper part of the intermediate range, characterised by the formation of pearlitic troostite with superimposition of secondary pearlite transformation, is apparently a common phenomenon with all structural steels. Slowing down of the pearlite transformation by alloying leads to an increase in the amount of pearlitic troostite and the appearance on the kinetic curves of definite inflections in the upper part of the intermediate range, indicating the beginning of superimposition of secondary pearlite transformation on to troostite.
There are 7 figures and 1 table.

ASSOCIATION: Moskovskiy institut stali i splavov
(Moscow Institute of Steel and Alloys)

SUBMITTED: August 11, 1961

ACC NR: AP6036405 SOURCE CODE: UR/0148/66/000/011/0110/0112

AUTHOR: Bystrova, N. A.; Vishnyakov, D. Ya.

ORG: Moscow Aviation Technology Institute (Moskovskiy aviatsionnyy tekhnologicheskiy institut)

TITLE: Effect of boron on the structure and properties of heat-resistant Kh16N25M2V5 steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1966, 110-112

TOPIC TAGS: heat resistant steel, chromium nickel molybdenum steel, boron containing steel, tungsten containing steel, steel structure, steel property/Kh16N25M2V5 steel

ABSTRACT: Cast specimens of Kh16N25M2V5 steel containing 0.005—0.14% B were annealed at 1200C for 1.5 hr, water quenched, and aged at 600—800C for 20 hr. As-cast specimens had a dendritic, coarse-grained structure with nonuniform distribution of carbides within grains and a carbide network at grain boundaries. Annealing brought about the dissolution of carbides. Aging produced the precipitation of secondary phases uniformly distributed within grains. In steels with 0.09% B and 0.14% B, the precipitated particles were very dispersed after aging at all temperatures tested. Alloying with 0.05—0.14% B intensifies the aging in proporation to boron content. Steel with 0.14% boron had a hardness of 195—205 kg/mm^2, compared with 157 kg/mm^2 for steel containing 0.005% B, at contents of 0.05—0.09%. However, at

Card 1/2 UDC: 669.14.018.45 : 669.781 : 669.011.7

ACC NR: AP6036405

850C the hardness drops significantly, indicating that 800—850C is the upper limit of the operational range for this steel. The optimum boron content was found to be 0.05—0.09%. Steel with 0.05% B had a tensile strength of 34.3 kg/mm^2, a yield strength of 23.7 kg/mm^2, an elongation of 20.8%, a reduction of area of 46.5%, and a rupture life (under a stress of 20 kg/mm^2) of 115 hr compared to 29.8 kg/mm^2, 17.6 kg/mm^2, 18.4%, 29.7%, and 65 hr for steel without boron and 33.0 kg/mm^2, 24.5 kg/mm^2, 9.2%, 2.31%, and 90 hr for steel with 0.14% boron. Orig. art. has: 4 figures.

SUB CODE: 11, 13/ SUBM DATE: 24Dec65/ORIG REF: 001/ OTH REF: 001/ ATD PRESS: 5107

Card 2/2

ACC NR: AT6036411 (N) SOURCE CODE: UR/2536/66/000/006/0021/0032

AUTHOR: Vishnyakov, D. Ya. (Doctor of technical sciences; Professor); Sovalova, A. A. (Candidate of technical sciences); Paisov, A. I. Candidate of technical sciences); Dmitriyev, L. I. (Engineer)

ORG: none

TITLE: The effect of the rate of rolling from the homogenizing temperature on the structure and properties of KhN77TYuR (EI437B) alloy

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966, Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 21-32

TOPIC TAGS: nickel chromium aluminum alloy, titanium containing alloy, boron containing alloy, alloy homogenization, cooling rate effect, alloy structure, alloy property/KhN77TYuR alloy

ABSTRACT: The structure and properties of KhN77TYuR(EI437C) nickel-base alloy, homogenized at 1080C for 8 hr, cooled at different rates (in water, oil, air or in furnace) and then aged at 750C for 16 hr, have been investigated. Tests at room temperature showed that specimens cooled at a rate of 500 °/min (oil quenched) had the highest strength and ductility: tensile strength 96.0 kg/mm^2, yield strength 69.8 kg/mm^2, elongation of 18.8%, reduction of area 22.5%. The notch toughness also

UDC: 669.017:669.15'24

Card 1/2

ACC NR: AT6036411

increased with the increasing cooling rate from 2 kg·m/cm^2 in specimens cooled at a rate of 1 °/min to 6 kg·m/cm^2 in water-quenched specimens. The highest rupture strength was observed in specimens cooled at a moderate rate of 20 °/min. Specimens cooled at a higher or at a lower rate had lower heat resistance. Air cooling (140 °/min) causes decomposition of γ-solid solution and the precipitation of the Ni (Ti Al) strengthening phase at 780C. At lower cooling rates the decomposition of solid solution begins at a higher temperature (900C at 1 °/min rate). The particle size of the strengthening phase decreases with increasing cooling rate: 1200—2500 Å at 1 °/min and less than 500 Å at 20 °/min. The microsturcture of the alloy with a maximum rupture strength is characterized by a uniform distribution of the strengthening phase particles (300—500 Å) within grains of γ-solid solution, an accumulation of chromium carbides, primarily at grain boundaries, and by the presence of layers of solid solution free of the strenthening phase along the grain boundaries, which prevent failures at small amounts of deformation. Orig. art. has: 6 figures and 2 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 005/ ATD PRESS: 5107

Card 2/2

ACC NR: AT6036409 (A) SOURCE CODE: UR/2536/66/000/066/0005/0015

AUTHOR: Vishnyakov, D. Ya. (Doctor of technical sciences, Professor); Sovalova, A. A. (Candidate of technical sciences)

ORG: none

TITLE: Effect of carbide-forming elements on the kinetics of isothermal transformation of austenite and the mechanical properties of manganese-molybdenum steel

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966, Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 5-15

TOPIC TAGS: manganese molybdenum steel, low alloy steel, tungsten containing steel, niobium containing steel, zirconium containing steel, titanium containing steel, vanadium containing steel, steel heat treatment, steel mechanical property, structural steel

ABSTRACT: In a search for nickel-free structural steels suitable to replace Cr-Ni, Cr-Ni-Mo and Cr-Ni-W steels used in machine building, a study has been made of the effect of carbide-forming elements on the kinetics of isothermal transformation of austenite and the mechanical properties of manganese-molybdenum steel. Fourteen heats of Mn-Mo steel, containing 0.40—0.48% C, 1.52—1.79% Mn, 0.28—0.30% Mo and one or more carbide-forming elements W, Nb, Zr, Ti, and V, were tested. Analysis of the test data showed that steels containing 0.62% W; 0.44% W and 0.19% Ti; 0.41% W

Card 1/2 UDC: 669.017.669.15'17'28

ACC NR: AP6036409

and 0.16 Zr; 0.36% W and 0.18% V; 0.35% W, 0.02% Zr, and 0.20% Ti; or 0.28% W, 0.16% Nb and 0.18% Ti had high mechanical properties and high hardenability (D_1 > 200) comparable to those of high-alloy Cr-Ni, Cr-Ni-Mo and Cr-Ni-W steels and that they can be recommended as substitutes for the latter. After oil quenching from 840—900C and tempering at 600C for 2 hr followed by water quenching, the steels had a tensile strength of 100.0—124.0 kg/mm^2, a yield strength of 85—109 kg/mm^2, an elongation of 13.0--16.0%, a reduction of area of 48.2—55.5%, and an impact toughness of 8.8—12.1 kg·m/cm^2. Orig. art. has: 3 figures and 6 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 5108

Card 2/2

ACC NR: AT6036413 SOURCE CODE: UR/2536/66/000/066/0039/0052

AUTHOR: Kolachev, B. A. (Candidate of technical sciences); Livanov, V. A. (Doctor of technical sciences, Professor); Vishnyakov, D. Y. (Doctor of technical sciences, Professor); Lyasotskaya, V. S. (Engineer)

ORG: none

TITLE: Isothermal transformations in alloys of titanium with molybdenum

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966. Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 39-52

TOPIC TAGS: isothermal transformation, titanium base alloy, molybdenum, phase diagram, martensitic transformation

ABSTRACT: The literature on the isothermal transformations of alloys in the Ti-Mo system shows certain gaps. Thus, e.g. Bungardt and Ruedinger (Z. Metallkunde, 1961, no. 52(2)) specify below the initial temperature M_i of martensitic transformation only the line of the beginning and end of decomposition of the α'-phase whereas both the β-phase and the α'-phase

 UDC: 669.017:669.295'28

ACC NR: AT6036413

should isothermally decompose within the temperature range between M_i and the final temperature M_f of martensitic transformation. To fill this gap the authors investigated specimens of titanium alloys containing 2, 6, 9 and 13% Mo and, on the basis of the change in hardness following isothermal treatment and according to the results of metallographic, selective radiographic and dilatometric analyses, they constructed the pertinent isothermal transformation diagrams. Isothermal treatment of the specimens was accomplished by placing them in an electric furnace at 1000°C for 1 hr and thereupon transferring them to tin, lead or salt baths (at 300, 400 and 500-800°C, respectively) and, after definite intervals of time, cooling them in water. Findings: the isothermal transformation diagram (ITD) for the alloy Ti+2% Mo is represented by two series of lines describing the beginning and end of the decomposition of the β- and α'-phases. Within the temperature range from M_i to M_f these two series of lines overlap; the same applies to the ITD for the alloy Ti+6% Mo. On the other hand, the ITD for the alloy Ti+9% Mo also includes a line of formation of the ω-phase (at temperatures of < 450°C). For the alloy Ti+13% Mo the ITD is represented by lines of the beginning and end of decomposition of the β-phase and by a line restricting the region of existence of the ω-phase. These lines overlap and the region $(\alpha+\beta+\omega)$ appears on the diagram. Thus increasing the Mo content above 9% complicates the formation of the ω-phase and shifts to the right the lines of the beginning of the segregation of this phase. The isothermal decomposition of the α'-phase in Ti alloys is usually accompanied

Card 2/3

ACC NR: AT6036413

by a decrease in hardness, while the decomposition of the β-phase leads to an increase in the hardness of the alloy and hence the pattern of variation in hardness with isothermal treatment is an indirect criterion of the phase composition of alloys of this kind. Orig. art. has: 12 figures, 1 table.

SUB CODE: 11, 20/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 006

Card 3/3

ACC NR: AT6036414 SOURCE CODE: UR/2536/66/000/066/0053/0062

AUTHOR: Vishnyakov, D. Ya. (Doctor of technical sciences, Professor); Kolachev, B. A. (Candidate of technical sciences); Lyasotskaya, V. S. (Engineer); Lebedeva, V. D. (Engineer)

ORG: none

TITLE: Isothermal transformations in alloys of titanium with chromium

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966. Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 53-62

TOPIC TAGS: titanium base alloy, chromium, isothermal transformation, phase diagram

ABSTRACT: The literature on this subject so far provides no information on isothermal transformations in alloys of the Ti-Cr system with hypo- and hypereutectoid compositions. To fill this gap, the authors constructed isothermal transformation diagrams (ITD) in alloys of Ti with 6 and 11% Cr (hypoeutectoid), 15% Cr (eutectoid) and 20% Cr (hypereutectoid) according to the change in hardness with isothermal treatment as well as according to the results of metallographic, radiographic and dilatometric analyses. Isothermal treatment at 600°C was

Card 1/2 UDC: 669.017:669.295'26

ACC NR: AT6036414

accomplished by rapidly cooling the specimens from a high temperature to the temperature of treatment, and at 550°C and below, after quenching. In both cases the isothermal treatment at > 300°C was performed in lead baths, and at 300-100°C, in baths of Wood's alloy. Findings: the hypoeutectoid and hypereutectoid alloys display two minima of β-phase stability: the low-temperature minimum, associated with the formation of the ω-phase, and the high-temperature minimum, conditioned by the hypoeutectoid segregation of the α-phase or $TiCr_2$. Increasing the Cr content above 6% complicates the segregation of the ω-phase and shifts to the right and downward the lines of the commencement of this segregation. The rate of formation of hypo-eutectoid segregations is the slower the closer the alloy's composition to the eutectoid point is. At low temperatures the β-phase decomposes nonuniformly; this is due not so much to the chemical heterogeneity of grains as to the heterogeneity of substructure, arising on rapid cooling of specimens or during the subsequent isothermal treatment. This substructure forms as a result of thermal stresses and the subsequent redistribution of dislocations. Orig. art. has: 10 figures.

SUB CODE: 11, 20/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 006

Card 2/2

ACC NR: AT6036412 (N) SOURCE CODE: UR/2536/66/000/066/0033/0038

AUTHOR: Vishnyakov, D. Ya. (Doctor of technical sciences, Professor); Bystrova, N. A. (Engineer)

ORG: none

TITLE: Effect of rare-earth elements on the structure and properties of Khl6N25M2V5 steel

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966, Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 33-38

TOPIC TAGS: chromium-~~nickel~~ nickel steel, rare earth element, cerium, praseodymium, metal grain structure, hardness, mechanical property / Khl6N25M2V5 chromium-nickel steel

ABSTRACT: The effect of cerium (0.02%) and praseodymium (0.02%) on the structure, hardness and mechanical properties of cast Khl6N25M2V5 chromium-nickel steel at 800°C was investigated. Untreated specimens of this steel contain irregularly shaped inclusions of oxides, sulfides and oxysulfides, whereas the specimens treated with Ce and Pr contain spheroid inclusions and, further, display a greater number of carbides. Hot Brinell hardness tests of

Card 1/2 UDC: 669.017:669.15'26'24'28

ACC NR: AT6036412

specimens aged at 600, 700, 750, 800 and 900°C for 20 hr showed that the hardness of steel treated with Ce and Pr is superior to the hardness of untreated steel regardless of aging temperature, while mechanical tests showed that the plasticity and breaking strength at 800°C of steel treated with Ce and Pr are superior to those of untreated steel. Evidently the addition of Ce and Pr activizes the processes of aging, increasing hardness of Khl6N25M2V5 steel to 200 kg/mm^2 from 145-155 kg/mm^2 at 800°C. These findings are in agreement with the data of other investigators, indicating that rare-earth elements form with Fe small regions of solid solutions, alter the position of the critical points and narrow the γ-region. Under the influence of rare-earth elements the carbon in the castings gets redistributed and the segregation of the other alloy elements (Cr, Mo) is enhanced. It thus may be assumed that the activization of aging processes is associated with the decrease in the solubility of carbon in austenite in the presence of Ce and Pr. The positive effect of Ce and Pr on properties at high temperatures is also attributable to the attendant elimination of impurities from grain boundaries and the change in the state of these boundaries due to the ability of rare-earth elements to get dissolved in boundary volumes and reduce the diffusion mobility of Cr atoms. Orig. art. has: 11 figures, 1 table.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 009

Card 2/2

ACC NR: AT6036410 (N) SOURCE CODE: UR/2536/66/000/066/0016/0020

AUTHOR: Bystrova, N. A. (Engineer); Vishnyakov, D. Ya. (Doctor of technical sciences, Professor)

ORG: none

TITLE: Hardness of high-temperature steels at elevated temperatures as a function of their alloying and heat treatment

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966. Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 16-20

TOPIC TAGS: hardness, high temperature strength, high temperature steel, metal aging

ABSTRACT: It is known that the indicators of hardness and high-temperature strength are interrelated. In this connection, the authors investigated the effect of alloy elements and aging temperature on hot hardness at 800°C. The investigation was performed with Cr-Ni steels alloyed with Al (steel 1), W (steel 2), W and Mo (steel 3), W, Mo and Ti (steels 4 and 5) and W, Mo, Ti and Al (steel 6), heat-treated by the following method: hardening (heating at 1200°C

Card 1/3 UDC: 669.017:669.15'26'24

for 2 hr with subsequent water cooling) and aging at 600, 700, 750, 800, 850 and 900°C for 20 hr. The specimens thus treated were subjected to Brinell hardness tests at 800°C. Findings: steel 4, alloyed with a small amount of Ti, is the least hardenable, while steels 5 (containing Ti) and 6 (containing Ti and Al) are the most hardenable (Fig. 1).

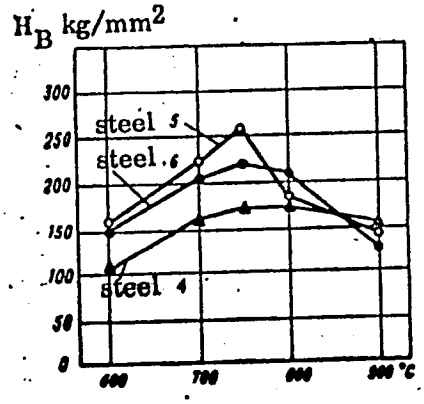


Fig. 1. Change in hardness as a function of aging temperature

ACC NR: AT6036410

The hardening of steels 5 and 6 occurs more intensely owing to the formation of a new hardening phase with having the general formula of β-Ni_3Ti. The optimal aging temperature is 750-800°C. As the duration of the hot hardness test increases (from 0.5 to 15 min) the hardness of steels decreases; this corresponds to the pattern of variation in strength during stress-rupture tests and is evidently associated with the development of processes of plastic deformation at high temperatures. This was confirmed by subsequent mechanical tests which also pointed to a direct correspondence between hardness and strength characteristics: the maximum long-time hardness of 136 kg/mm, achieved after aging at 750°C, corresponds to the longest time to fracture (40 min). Thus the hot hardness test method makes it possible to classify the investigated steels according to the level of high-temperature strength. The test findings show that high-temperature hardness is a sufficiently objective indicator of the high-temperature strength of the investigated steels. Thus steel 1, which displays high hardness at room temperature, displays the least hardness and stress-rupture strength at 800°C, while steel 6, which occupies an intermediate position as regards hardness at room temperature, proved to have the highest high-temperature strength at 800°C. Orig. art. has: 4 figures, 2 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 001

Card 3/3

VISHNYAKOV, Dmitriy Yakovlevich, prof., doktor tekhn. nauk; ROSTOVTSEV Gennadiy Nikolayevich; NEUSTRUYEV, Aleksandr Aleksandrovich; STARODUBOV, K.F., doktor tekhn. nauk, prof., akademik, retsenzent; SOKOLOV, K.N., doktor tekhn. nauk, prof., retsenzent; DOLZHENKOV, I.Ye., kand. tekhn. nauk, dots., retsenzent; SHTEPENKO, V.Z., kand. tekhn.nauk, dots. retsenzent; KRAVTSOV, A.F., kand. tekhn. nauk, dots., retsenzent; FIL'TSER, G.A., dots., retsenzent; SILICH, A.N., st. prepodav., retsenzent; SIUKHIN, A.F., assistent, retsenzent; SAVEL'YEV, L.P., assistent, retsenzent

[Equipment, mechanization and automation of heat-treating plants] Oborudovanie, mekhanizatsiia i avtomatizatsiia v termicheskikh tsekhakh. Moskva, Metallurgiia, 1964. 467 p. (MIRA 17:10)

1. Akademiya nauk Ukr. SSR (for Starodubov).

ADOV, Ye.; VISHNYAKOV, G.; NOVIKOV, Ye.

Information. Avt. transp. 41 no.9:57-59 S '63. (MIRA 16:10)

VISHNYAKOV, G.F., inzh.; KALININA, K.S., inzh.; MATVEYEVA, N.A., inzh.

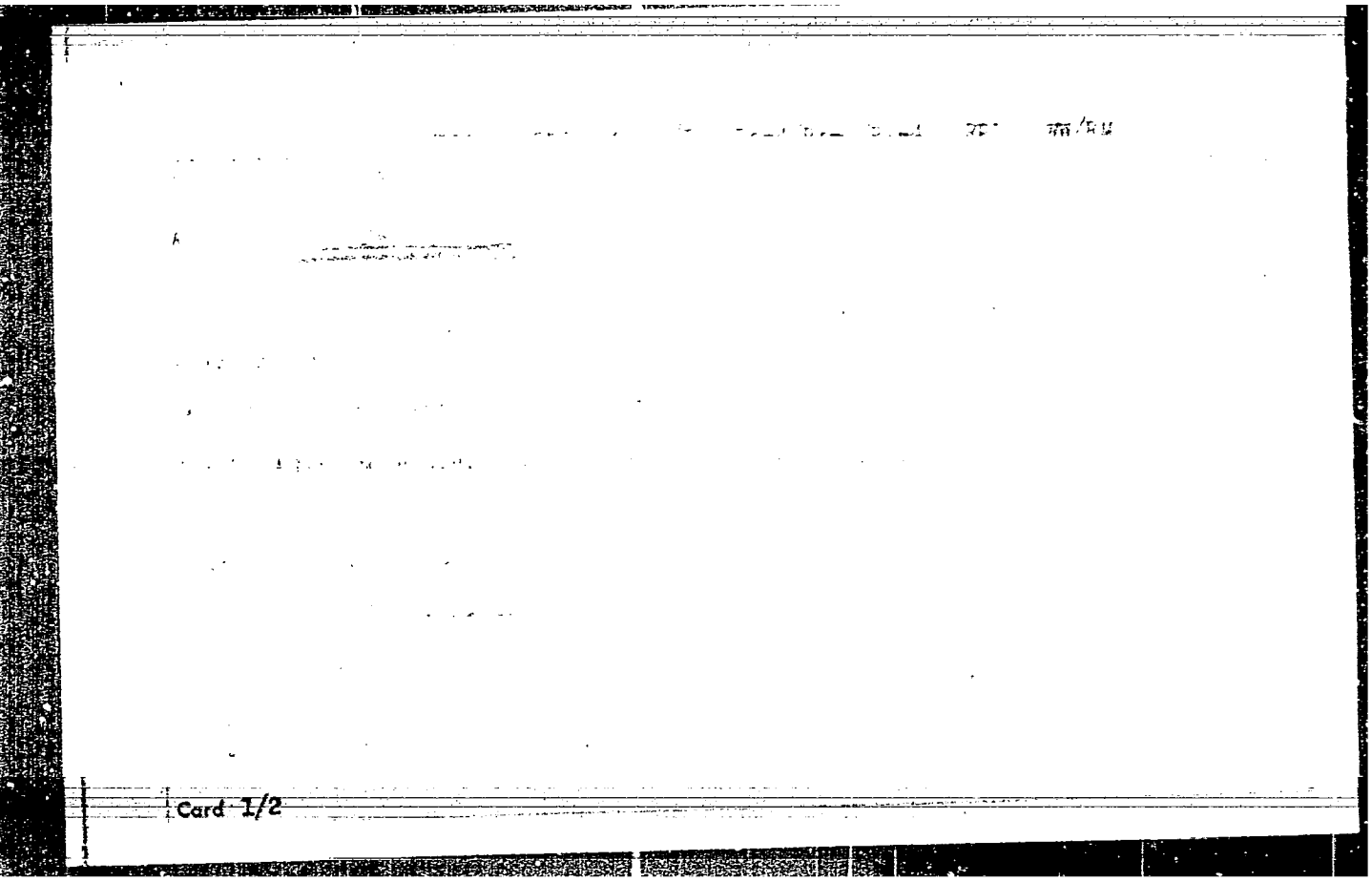
Functioning of the ventilation systems of motion-picture theater auditoriums in Moscow. Vod. i san. tekh. no.8:8-11 Ag '62. (MIRA 15:9)

(Motion-picture theaters--Ventilation)

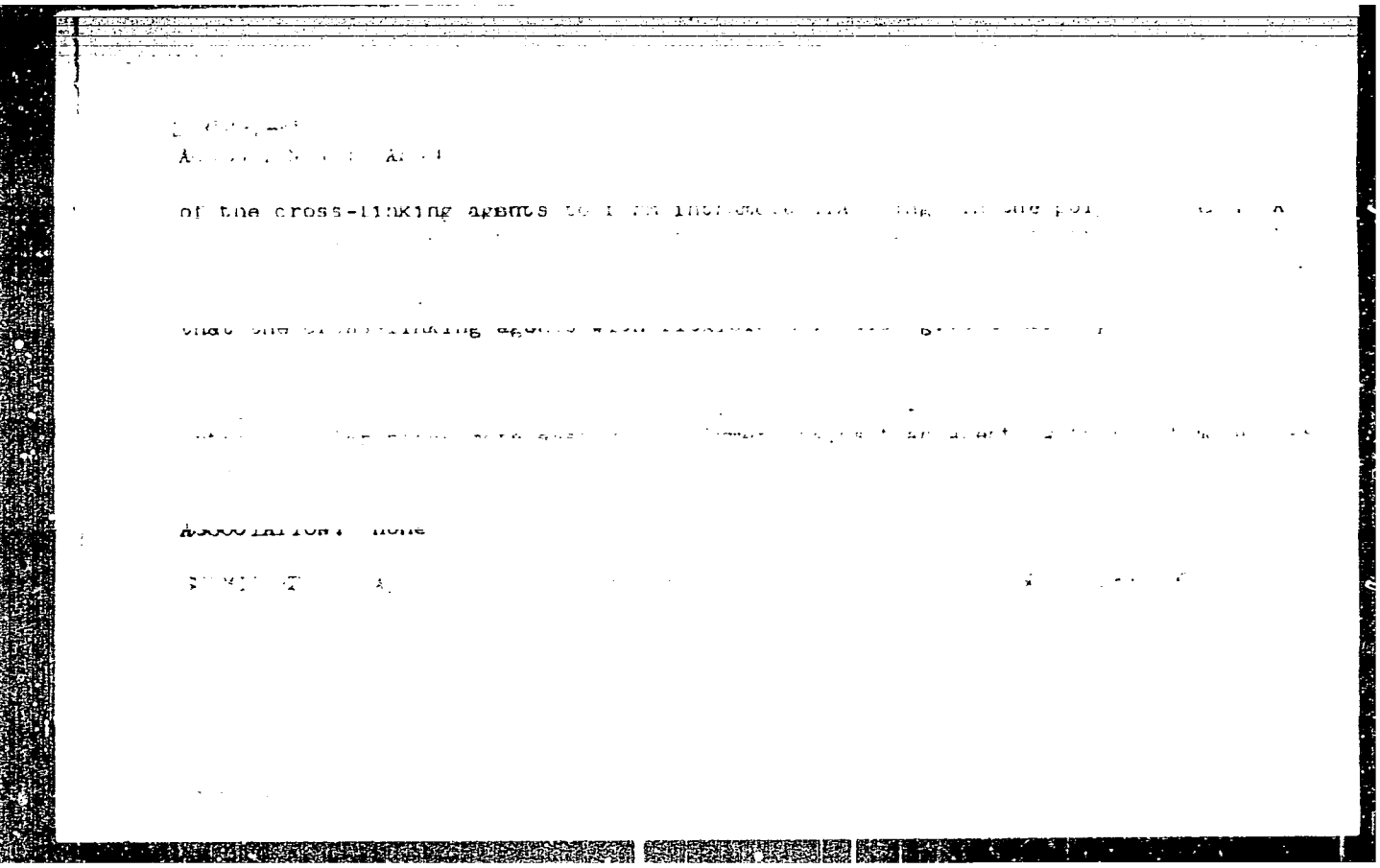
VISHNYAKOV, I.A., polkovnik, Geroy Sovetskogo Soyuza, voyennyy letchik pervogo klassa

Attack from complex maneuvers. Vest.Vozd.Fl. no.1:27-28 Ja '61. (MIRA 13:12)

(Aerial warfare)



Card 1/2



of the cross-linking agents

None

VISHNYAKOV, I.I.

Measurement of the thermodynamic parameter of polymer-liquid interaction for the system polystyrene - o-xylene. Vysokom. soed. 5 no.10:1549-1551 O '63. (MIRA 17:1)

KONDRASHOV, N., kapitan 1 ranga; VISHNYAKOV, Kh., inzhener-podpolkovnik

Ice roads. Tyl i snab.Sov. Voor.Sil 21 no.2:77-81 F '61. (MIRA 14:6)

(Roads, Ice)
(Ice on rivers, lakes, etc.)

SOV/95-59-[illegible]

Gal'perin, A.I., Candidate of Technical Sciences, and
Vishnyakov, L.V., Engineer

New Machine for Bending 529 mm Pipes (Novyy stanok dlya gnut'ya trub diametrom 529 mm)

PERIODICAL: Stroitel'stvo truboprovodov, 1959, Nr 2, pp 25-29 (USSR)

ABSTRACT: In accordance with drawings of the designing bureau of the "Gazstroymashina" and "VNIIST" a new machine, the UGT-7 has been turned out by the 'MEMZ" (Experimental Mechanical Plant in Moscow) for cold bending of thin walled pipes of 219-529 mm diameter. The new machine works on the principle of bilateral compression, by bending the pipe over a saddle placed on top of the pipe at the bending zone, the bending being performed by a semi-cylinder shaped support and 3 hydraulic jacks. Tubes of various diameters can be bent after the corresponding inserts are fitted into the support. The whole mechanism is mounted on a rigid frame, resting on slides on which the machine can be moved. The machine is equipped with a capstan for moving the pipe and an engine of the type UD2 connected by means of a reducer to the hydraulic pump H-41. Set at

Card 1/2

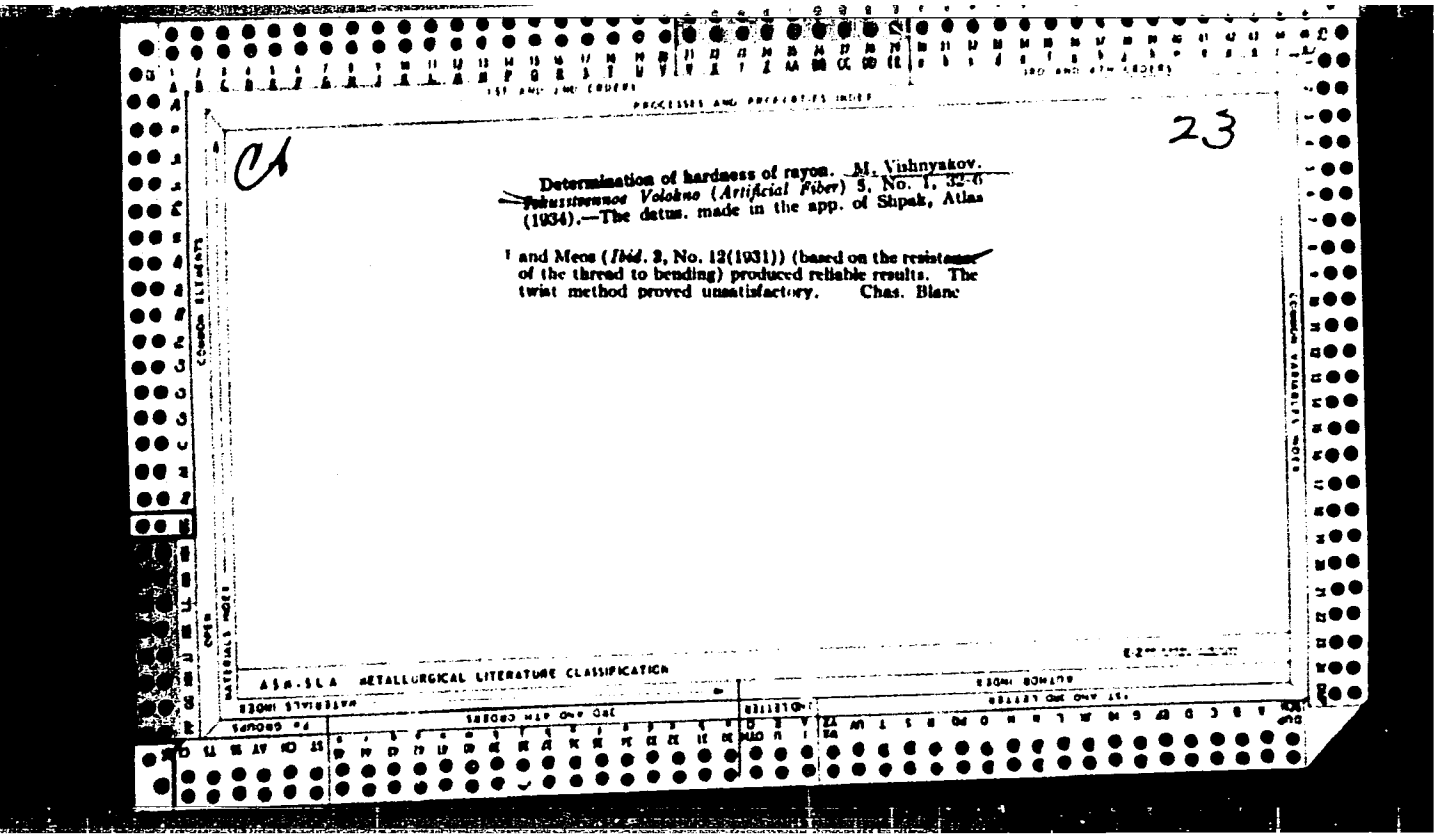
New Machine for Bending 529 mm Pipes

2,200 RPM, the engine develops 6 hp. The capstan has a capacity of 2,000 kg. The hydraulic system covers the performance of the entire hydraulic installation, consisting of the capstan and 3 hydraulic jacks: The oil which by gravity flow enters the pump is directed by a slide valve distributor to the above named hydraulic organs in such a way that the oil can pass only through one channel at a time. The article gives a brief description of the various component units of the machine UGT-7. From these it follows that it takes 3 minutes for the machine to perform a bent.
There are 5 diagrams, 1 photo, and 1 table.

Card 2/2

GAL'PERIN, A.I., kand. tekhn. nauk; VISHNYAKOV L.V., inzh.

New bender for 529mm diameter pipes. Stroi. truboprov 4 no.2: 25-29 F '59. (MIRA 12:5)
(Pipe bending)



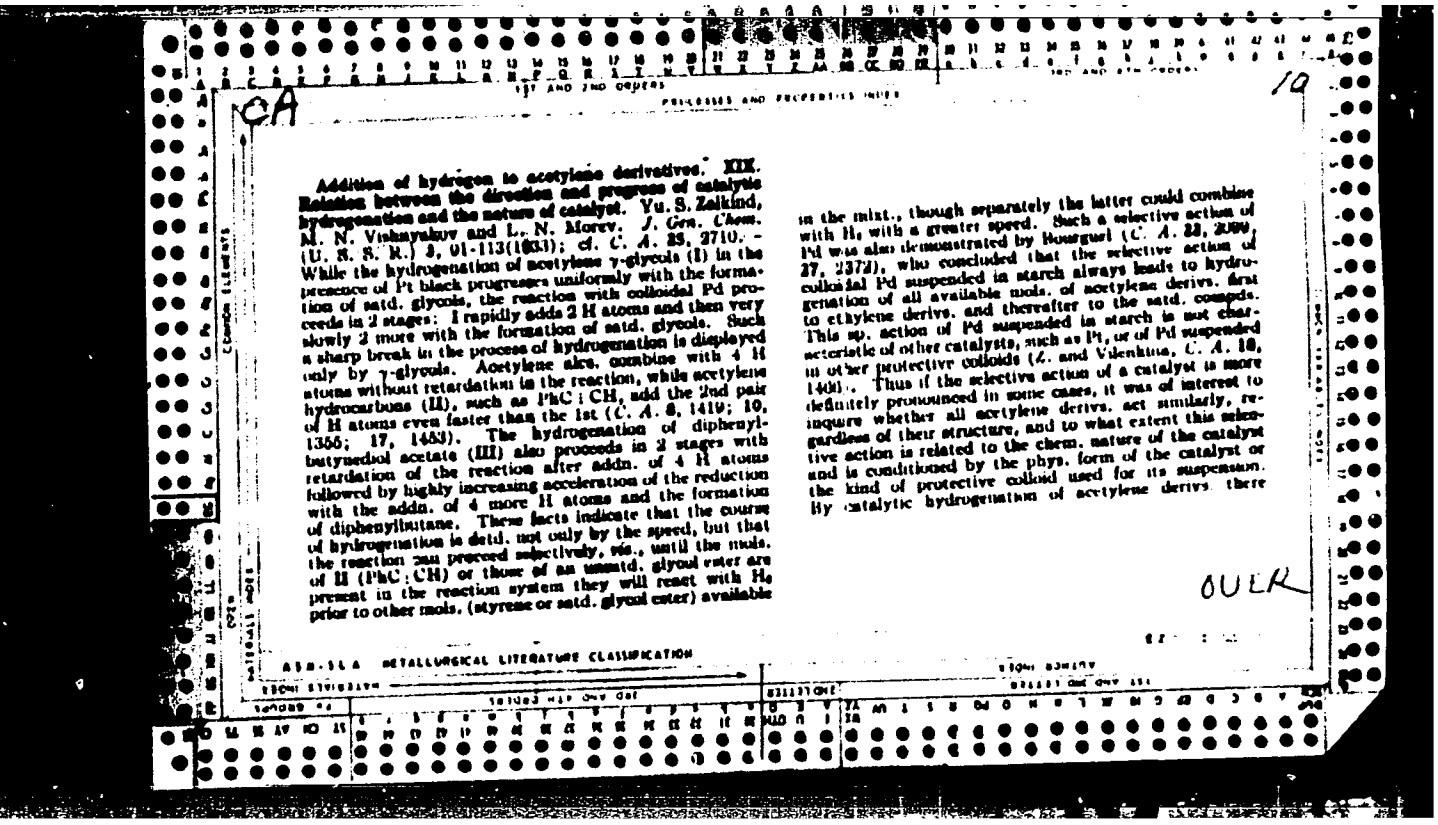
CA

23

Determination of hardness of rayon. M. Vishnyakov. *Iskusstvennoe Volokno* (*Artificial Fiber*) 5, No. 1, 32-6 (1934).—The detns. made in the app. of Shpak, Atlas and Meos (*Ibid.* 3, No. 12(1931)) (based on the resistance of the thread to bending) produced reliable results. The twist method proved unsatisfactory. Chas. Blanc

A§a-5La METALLURGICAL LITERATURE CLASSIFICATION

VISHNYAKOV, M.N.,
L. I. BARSUKOVA, ZhOKh 11, 1218-20 (1941)

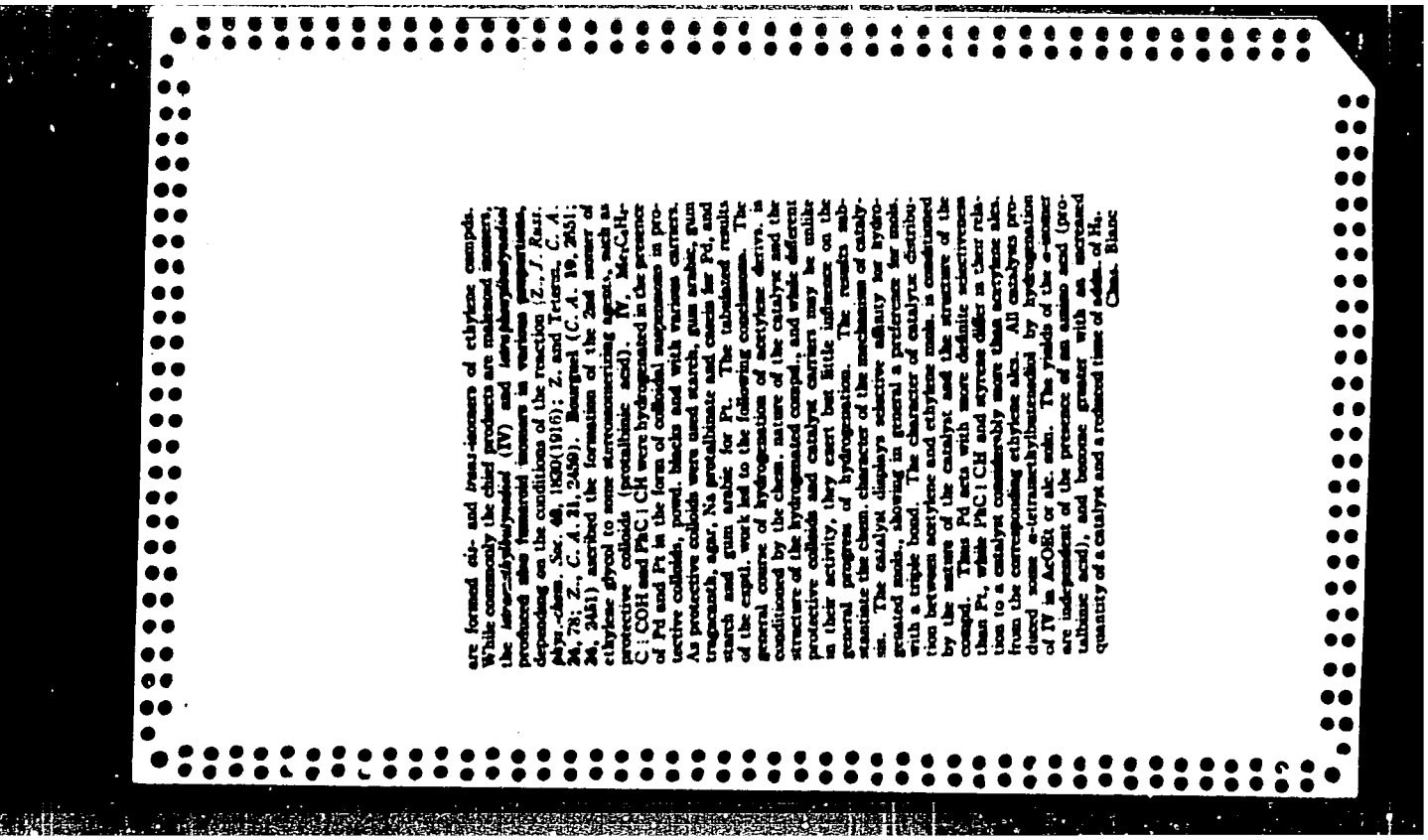


CA

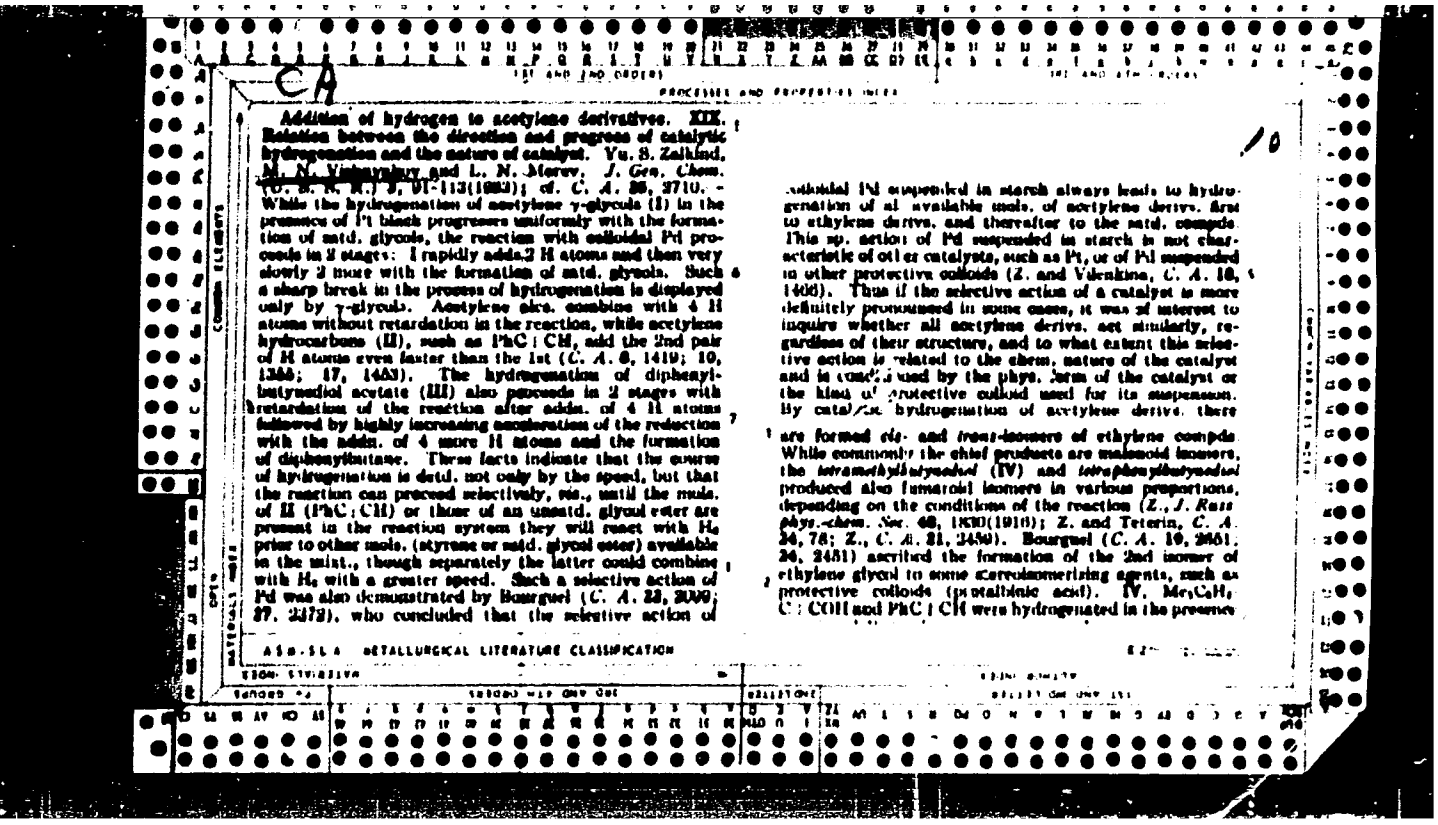
19

Addition of hydrogen to acetylene derivatives. XIX. Relation between the direction and progress of catalytic hydrogenation and the nature of catalyst. Yu. S. Zelinskii, M. N. Vinnyakov and L. N. Morev. *J. Gen. Chem.* (U. S. S. R.) 3, 91-113(1933); cf. *C. A.* 25, 2710. - While the hydrogenation of acetylene γ-glycols (I) in the presence of Pt black progresses uniformly with the formation of satd. glycols, the reaction with colloidal Pd proceeds in 2 stages: I rapidly adds 2 H atoms and then very slowly 2 more with the formation of satd. glycols. Such a sharp break in the process of hydrogenation is displayed only by γ-glycols. Acetylene alcs. combine with 4 H atoms without retardation in the reaction, while acetylene hydrocarbons (II), such as PhC : CH, add the 2nd pair of H atoms even faster than the 1st (*C. A.* 8, 1419; 10, 1355; 17, 1453). The hydrogenation of diphenylbutynediol acetate (III) also proceeds in 2 stages with retardation of the reaction after addn. of 4 H atoms followed by highly increasing acceleration of the reduction with the addn. of 4 more H atoms and the formation of diphenylbutane. These facts indicate that the course of hydrogenation is detd. not only by the speed, but that the reaction can proceed selectively, viz., until the mols. of II (PhC : CH) or those of an unsatd. glycol ester are present in the reaction system they will react with H_2 prior to other mols. (styrene or satd. glycol ester) available in the mixt., though separately the latter could combine with H_2 with a greater speed. Such a selective action of Pd was also demonstrated by Bourguel (*C. A.* 23, 2589; 27, 2372), who concluded that the selective action of colloidal Pd suspended in starch always leads to hydrogenation of all available mols. of acetylene derivs. first to ethylene derivs. and thereafter to the satd. compds. This sp. action of Pd suspended in starch is not characteristic of other catalysts, such as Pt, or of Pd suspended in other protective colloids (*Z.* and Videnkina, *C. A.* 18, 1401). Thus if the selective action of a catalyst is more definitely pronounced in some cases, it was of interest to inquire whether all acetylene derivs. act similarly, regardless of their structure, and to what extent this selective action is related to the chem. nature of the catalyst and is conditioned by the phys. form of the catalyst or the kind of protective colloid used for its suspension. By catalytic hydrogenation of acetylene derivs. there

OVER



are formed cis- and trans-isomers of ethylene compds. While commonly the chief products are natural isomers, the tetraethylstyrenes (IV) and tetraphenylstyrenes produced the unnatural isomers in various proportions, depending on the conditions of the reaction (Z., *J. Russ. Phys.-Chem. Soc.* 48, 1830(1916); Z. and Tetrov, *C. A.* 24, 78; Z., *C. A.* 31, 2450). Bourgel (*C. A.* 19, 2851; 24, 3481) ascribed the formation of the 2nd isomer of ethylene glycol to some stereoconverting agent, such as protective colloids (protalbinic acid). IV, $MeC_6H_4C{:}COH$ and $PhC{:}CH$ were hydrogenated in the presence of Pd and Pt in the form of colloidal suspension in protective colloids, powd. blacks and with various carriers. As protective colloids were used starch, gum arabic, gum tragacanth, agar, Na protalbinate and casein for Pd, and starch and gum arabic for Pt. The tabulated results of the exptl. work led to the following conclusions. The general course of hydrogenation of acetylene derivs. is conditioned by the chem. nature of the catalyst and the structure of the hydrogenated compds., and while different protective colloids and catalyst carriers may be unlike in their activity, they exert but little influence on the general progress of hydrogenation. The results substantiate the chem. character of the mechanism of catalysis. The catalyst displays selective affinity for hydrogenated ends, showing in general a preference for ends with a triple bond. The character of catalyst distribution between acetylene and ethylene ends is conditioned by the nature of the catalyst and the structure of the compd. Thus Pd acts with more definite selectiveness than Pt, while $PhC{:}CH$ and styrene differ in their relation to a catalyst considerably more than acetylene alc. from the corresponding ethylene alc. All catalysts produced some s-tetramethylbutanediol by hydrogenation of IV in AcOEt or alc. soln. The yields of the s-isomer are independent of the presence of an amino acid (protalbinic acid), and become greater with an increased quantity of a catalyst and a reduced time of addn. of H. Chas. Blanc



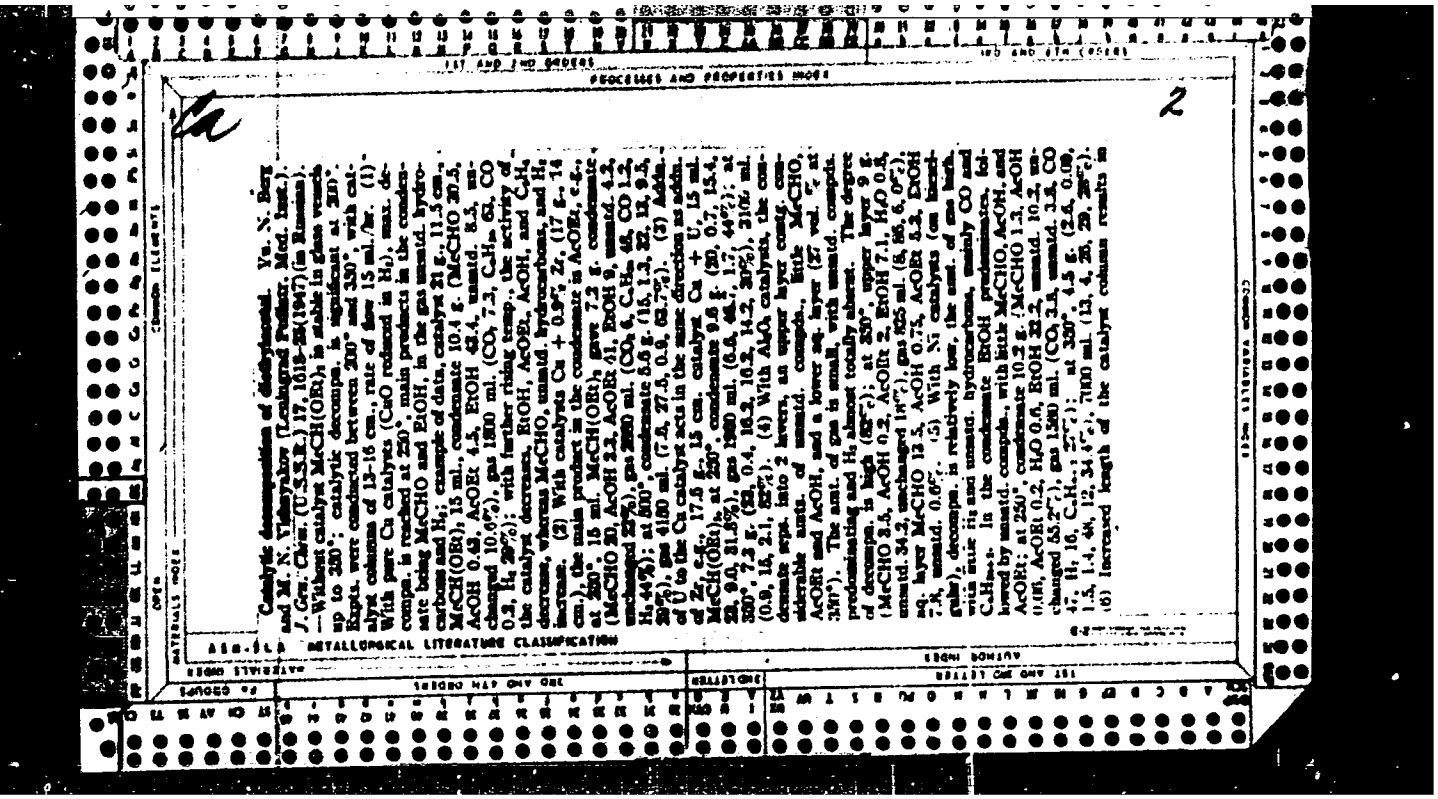
CA

Addition of hydrogen to acetylene derivatives. XIX. Relation between the direction and progress of catalytic hydrogenation and the nature of catalyst. Yu. S. Zalkind, M. N. Vinkovskaya and L. N. Morev. *J. Gen. Chem. (U. S. S. R.)* 3, 91-113(1933); cf. *C. A.* 26, 3710. - While the hydrogenation of acetylene γ-glycols (I) in the presence of Pt black progresses uniformly with the formation of satd. glycols, the reaction with colloidal Pt proceeds in 2 stages: I rapidly adds 2 H atoms and then very slowly 2 more with the formation of satd. glycols. Such a sharp break in the process of hydrogenation is displayed only by γ-glycols. Acetylene alcs. combine with 4 H atoms without retardation in the reaction, while acetylene hydrocarbons (II), such as PhC : CH, add the 2nd pair of H atoms even faster than the 1st (*C. A.* 8, 1419; 10, 1356; 17, 1483). The hydrogenation of diphenylisobutynediol acetate (III) also proceeds in 2 stages with retardation of the reaction after addn. of 4 H atoms followed by highly increasing acceleration of the reduction with the addn. of 4 more H atoms and the formation of diphenylbutane. These facts indicate that the course of hydrogenation is detd. not only by the speed, but that the reaction can proceed selectively, viz., until the mols. of II (PhC : CH) or those of an unsatd. glycol ester are present in the reaction system they will react with H_2 prior to other mols. (styrene or satd. glycol ester) available in the mixt., though separately the latter could combine with H_2 with a greater speed. Such a selective action of Pd was also demonstrated by Bourguel (*C. A.* 23, 3099; 27, 2373), who concluded that the selective action of colloidal Pd suspended in starch always leads to hydrogenation of al available mols. of acetylene derivs. first to ethylene derivs. and thereafter to the satd. compds. This sp. action of Pd suspended in starch is not characteristic of other catalysts, such as Pt, or of Pd suspended in other protective colloids (Z. and Vdenkina, *C. A.* 18, 1408). Thus if the selective action of a catalyst is more definitely pronounced in some cases, it was of interest to inquire whether all acetylene derivs. act similarly, regardless of their structure, and to what extent this selective action is related to the chem. nature of the catalyst and is conditioned by the phys. form of the catalyst or the kind of protective colloid used for its suspension. By catalytic hydrogenation of acetylene derivs. there are formed *cis*- and *trans*-isomers of ethylene compds. While commonly the chief products are maleinoid isomers, the *tetramethylbutynediol* (IV) and *tetraphenylbutynediol* produced also fumaroid isomers in various proportions, depending on the conditions of the reaction (Z., *J. Russ. phys.-chem. Soc.* 48, 1830(1916); Z. and Teterin, *C. A.* 24, 76; Z., *C. A.* 21, 2450). Bourguel (*C. A.* 19, 2861; 24, 2451) ascribed the formation of the 2nd isomer of ethylene glycol in some carroidmerizing agents, such as protective colloids (protalbinic acid). IV, $Me_2C(H)$-C : C(OH)-$(H)C(Me)_2$ and PhC : CH were hydrogenated in the presence

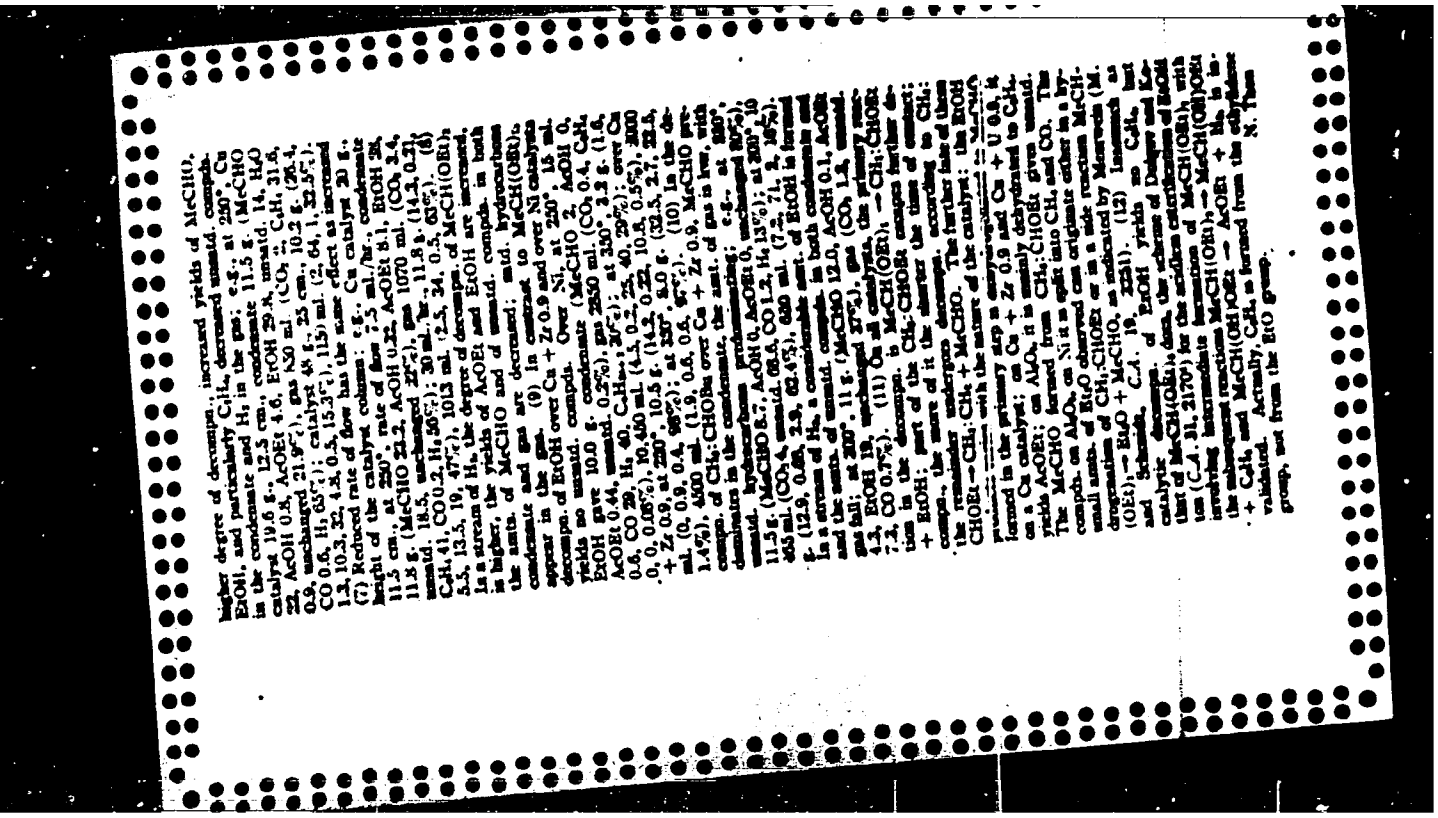
A58-SL4 METALLURGICAL LITERATURE CLASSIFICATION

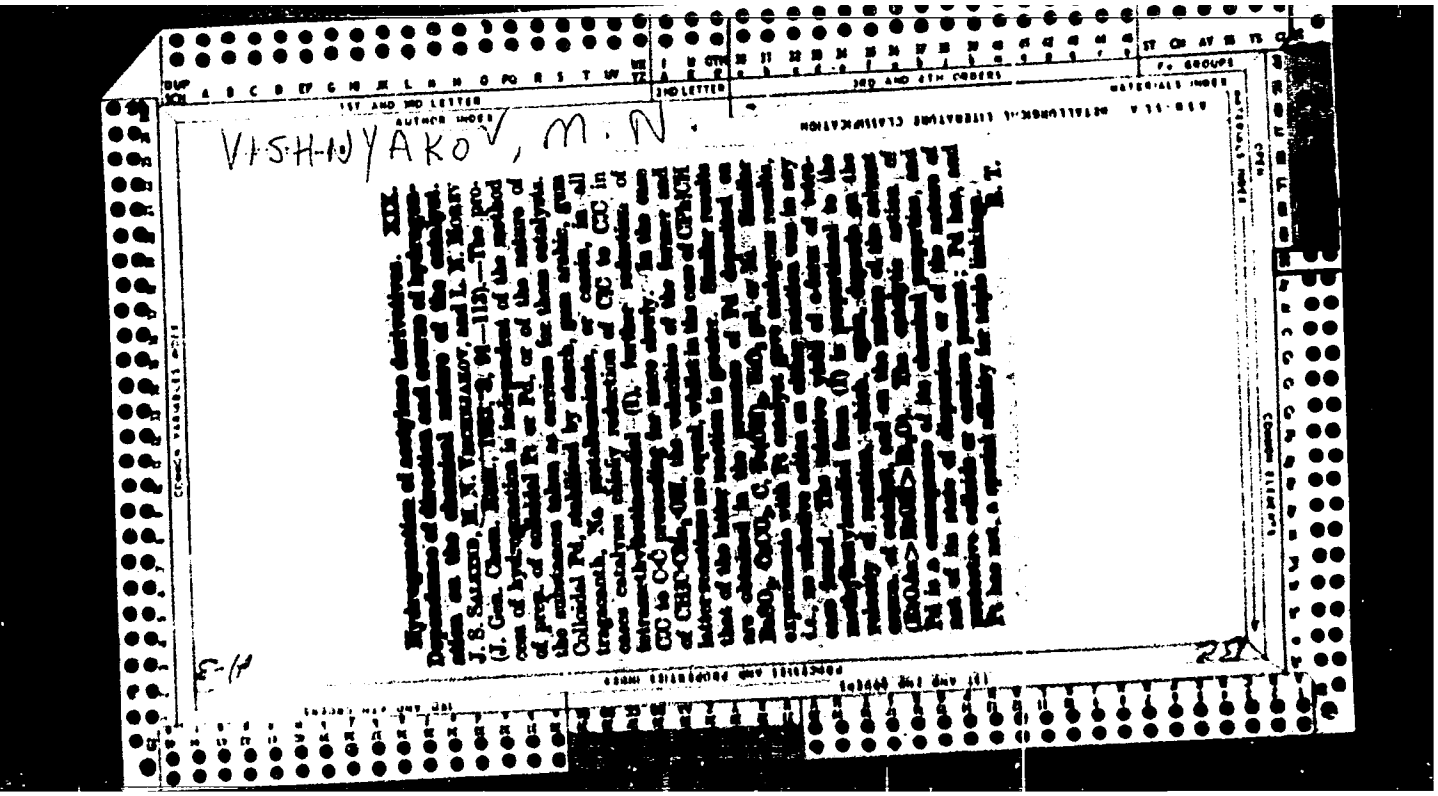
of Pd and Pt in the form of colloidal suspensions in protective colloids, powd. blocks and with various carriers. As protective colloids were used starch, gum arabic, gum tragacanth, agar, Na protalbinate and casein for Pd, and starch and gum arabic for Pt. The tabulated results of the expt. work led to the following conclusions. The general course of hydrogenation of acetylene derivs. is conditioned by the chem. nature of the catalyst and the structure of the hydrogenated compd., and while different protective colloids and catalyst carriers may be unlike in their activity, they exert but little influence on the general progress of hydrogenation. The results substantiate the chem. character of the mechanism of catalysis. The catalyst displays selective affinity for hydrogenated mols., showing in general a preference for mols. with a triple bond. The character of catalytic distribution between acetylene and ethylene mols. is conditioned by the nature of the catalyst and the structure of the compd. Thus Pd acts with more definite selectiveness than Pt, while PhC : CH and styrene differ in their relation to a catalyst considerably more than acetylene alcs. from the corresponding ethylene alcs. All catalysts produced were α-tetramethylbutynediol by hydrogenation of IV in AcOEt or alc. solns. The yields of the α-diethynes are independent of the presence of an amino acid (protalbinic acid), and become greater with an increased quantity of a catalyst and a reduced time of addn. of H_2.

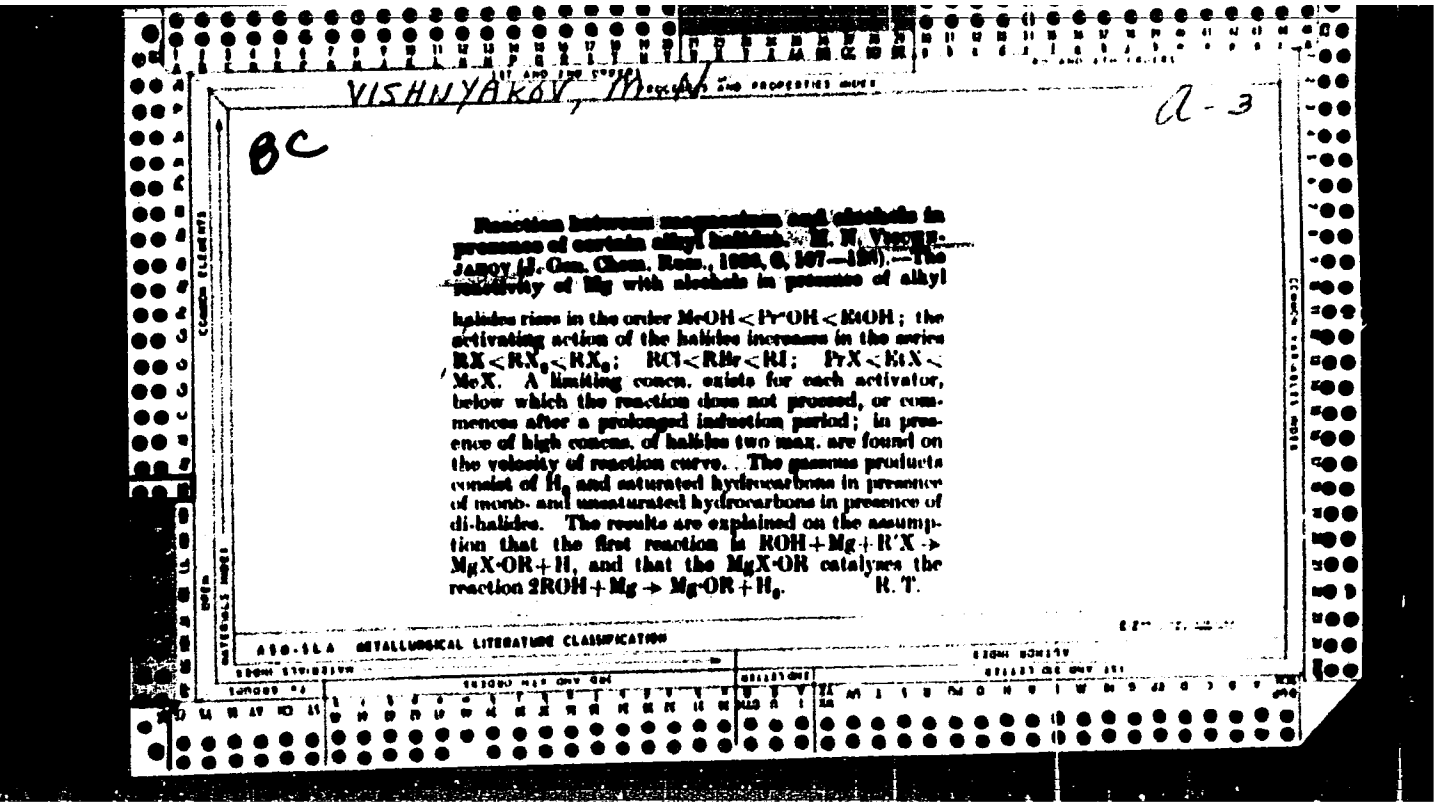
Chas. Blanc



Catalytic decomposition of dialkylacetal. Ya. N. Berg and M. N. Vilkeyshov (Leningrad Politech. Med. Inst.). *J. Gen. Chem. (U.S.S.R.)* 17, 1015–28 (1947) (in Russian). — Without catalyst $MeCH(OR)_2$ is stable in glass vessels up to 250°; catalytic decomposition is significant at 200°. Expts. were conducted between 200° and 330°, with catalyst columns of 13–16 cm., rate of flow 15 ml./hr. (1) With pure Ca catalyst (CaO reduced in H_2), max. decompn. is reached at 250°; main products in the condensate being MeCHO and EtOH, in the gas mixt. hydrocarbons and H_2; example of data, catalyst 21 g., 11.5 cm., $MeCH(OR)_2$ 15 ml., condensate 10.4 g. (MeCHO 20.5, AcOH 0.45, AcOEt 4.5, EtOH 43.4, unatd. 8.5, unchanged 10.6%), gas 1800 ml. (CO_2 7.3, C_nH_{2n} 62, CO 0.2, H_2 29.7%); with further rising temp., the activity of the catalyst decreases, whereas MeCHO, unatd. hydrocarbons, and H_2 increase. (2) With catalysts Ca + 0.5% Zr (17 g., 14 cm.), the main product in the condensate is AcOEt, e.g., at 250°, 15 ml. $MeCH(OR)_2$ gave 7.2 g. condensate (MeCHO 20, AcOH 2.2, AcOEt 41, EtOH 9, unatd. 4.2, unchanged 23%), gas 2800 ml. (CO_2 4, C_nH_{2n} 45, CO 1.2, H_2 44.8%); at 300°, condensate 8.5 g. (15, 1.3, 22, 12, 9.5, 20%), gas 4100 ml. (7.5, 27.5, 0.8, 62.7%). (3) Addn. of U to the Ca catalyst acts in the same direction as addn. of Zr, e.g., 17.5 g., 15 cm. catalyst Ca + U, 15 ml. $MeCH(OR)_2$ at 250°, condensate 9.6 g. (20, 0.7, 13.4, 22, 9.0, 31.5%), gas 1900 ml. (0.6, 44.1, 1.7, 44%); at 300°, 7.3 g. (22, 0.4, 16.2, 10.2, 14.2, 20%), 3100 ml. (0.9, 14, 2.1, 82%). (4) With AlO catalysts, the condensate sepd. into 2 layers, an upper layer consg. mainly of MeCHO, considerable amts. of unatd. compds., little MeCHO, AcOEt and AcOH, and a lower aq. layer (27 vol. % at 330°). The amt. of gas is small, with unatd. compds. predominating and H_2 almost totally absent. The degree of decompn. is high (82–7); at 250°, upper layer 9 g. (MeCHO 3.5, AcOH 0.2, AcOEt 2, EtOH 7.1, H_2O 0.5, unatd. 34.2, unchanged 1%), gas 825 ml. (6, 86, 6, 0%); aq. layer MeCHO 13.5, AcOH 0.7, AcOEt 5.3, EtOH 7.8, unatd. 0.6%; (5) With Ni catalysts (as kieselguhr), decompn. is relatively low, the amt. of gas being with little H_2 and unatd. hydrocarbons, mainly CO and C_nH_{2n}. In the condensate EtOH predominates, followed by unatd. compds., with little MeCHO, AcOH, and AcOEt; at 250°, condensate 10.2 g. (MeCHO 1.3, AcOH 0.18, AcOEt 0.2, H_2O 0.4, EtOH 82.2, unatd. 10.2, unchanged 53.2%), gas 1360 ml. (CO_2 3.5, unatd. 3.4, CO 47, H_2 16, C_nH_{2n} 27%); at 330°, 4.5 g. (2.4, 0.08, 1.5, 1.4, 48, 12, 34.4%), 7100 ml. (12, 4, 28, 29, 25%). (6) Increased length of the catalyst column results in







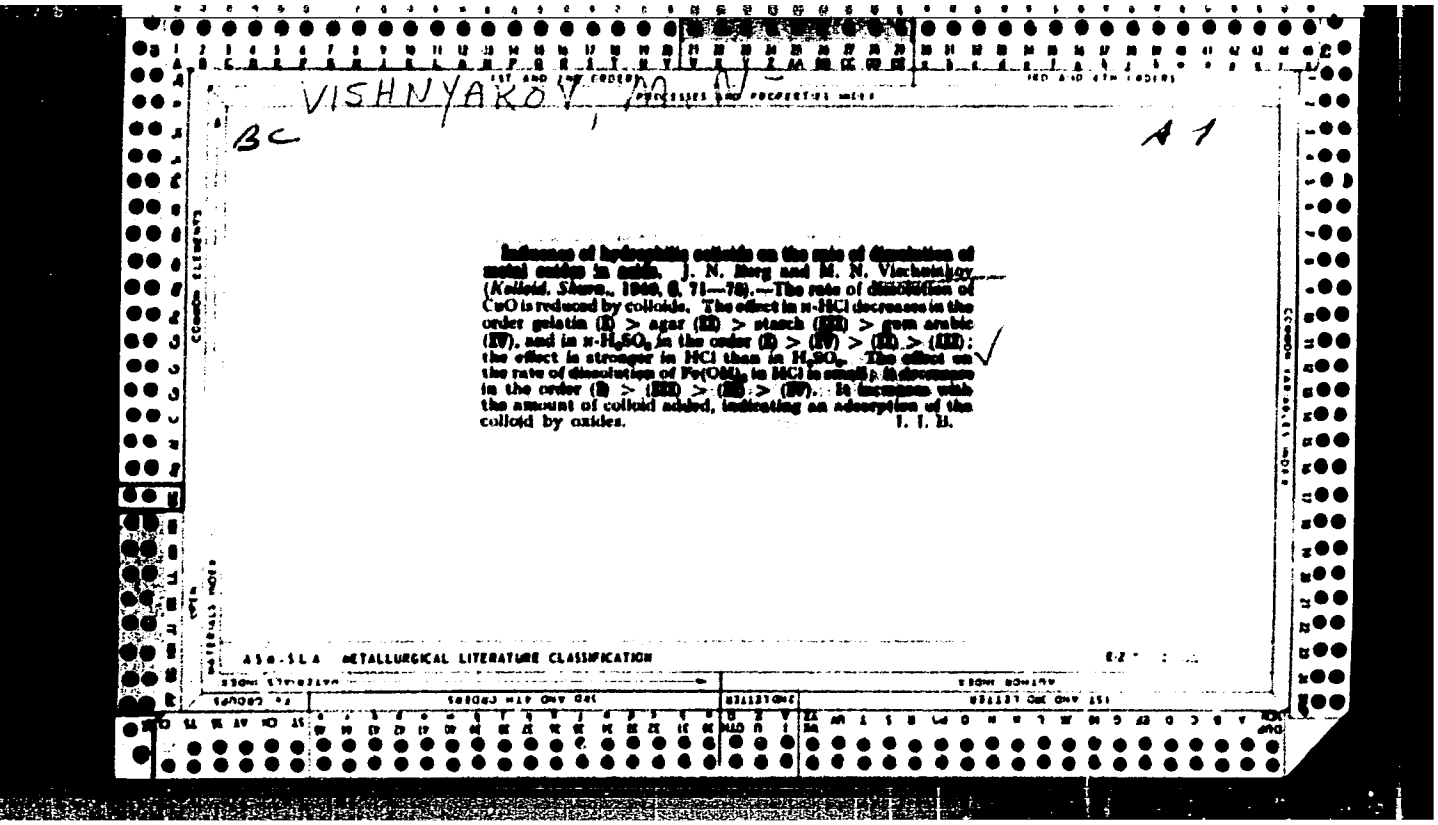
VISHNYAKOV, M...

BC

A-3

Reaction between magnesium and alcohols in presence of certain alkyl halides. M. N. Vishnyakov. J. Gen. Chem. Russ., 1938, 8, 107—120).—The reactivity of Mg with alcohols in presence of alkyl halides rises in the order MeOH < PrOH < EtOH; the activating action of the halides increases in the series $RX < RX_2 < RX_3$; RCl < RBr < RI; PrX < EtX < MeX. A limiting concn. exists for each activator, below which the reaction does not proceed, or commences after a prolonged induction period; in presence of high concns. of halides two max. are found on the velocity of reaction curve. The gaseous products consist of H_2 and saturated hydrocarbons in presence of mono- and unsaturated hydrocarbons in presence of di-halides. The results are explained on the assumption that the first reaction is $ROH + Mg + R'X \rightarrow MgX\cdot OR + H$, and that the MgX·OR catalyses the reaction $2ROH + Mg \rightarrow Mg(OR)_2 + H_2$. R. T.

A50-51A METALLURGICAL LITERATURE CLASSIFICATION



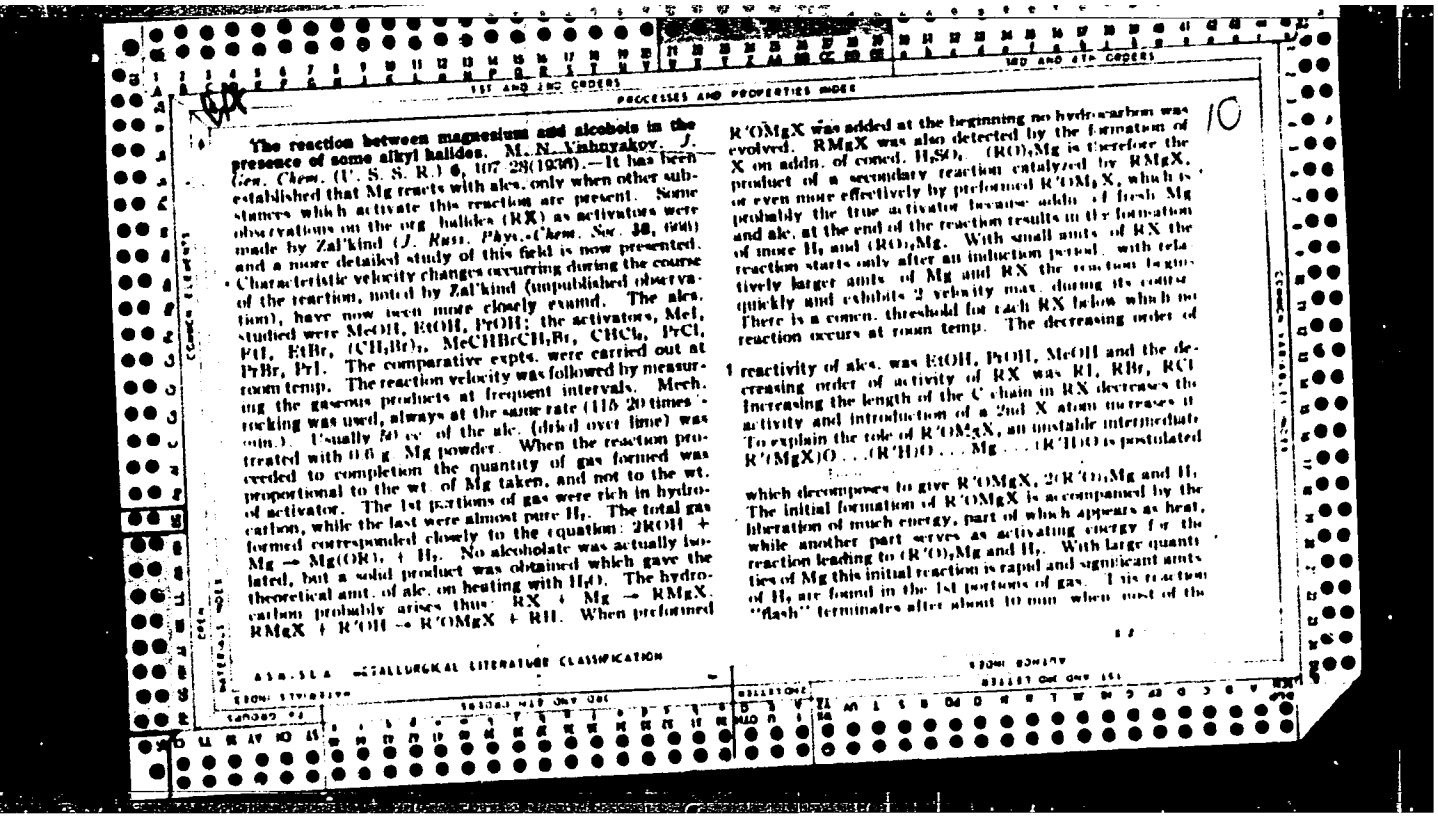
VISHNYAKOV, [illegible]

B C

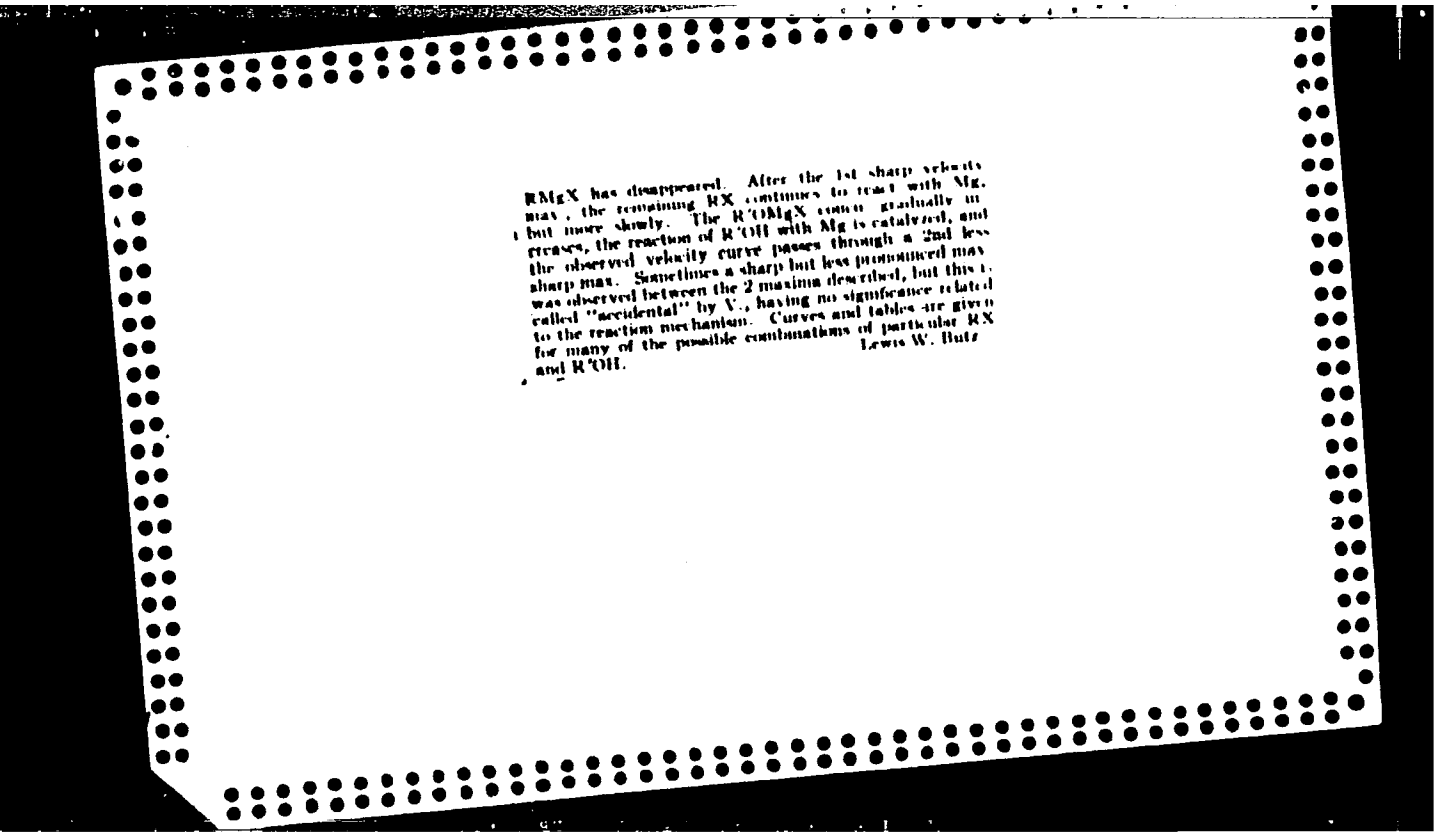
A 1

Influence of hydrophilic colloids on the rate of dissolution of metal oxides in acids. I. N. Berg and M. N. Vlachnin [illegible] (*Kolloid. Zhurn.*, 1960, 22, 71—78).—The rate of dissolution of CuO is reduced by colloids. The effect in *n*-HCl decreases in the order gelatin (I) > agar (II) > starch (III) > gum arabic (IV), and in *n*-H_2SO_4 in the order (I) > (IV) > (II) > (III); the effect is stronger in HCl than in H_2SO_4. The effect on the rate of dissolution of $Fe(OH)_3$ in HCl is small; it decreases in the order (I) > (III) > (II) > (IV). It increases with the amount of colloid added, indicating an adsorption of the colloid by oxides. I. I. B.

A 5 0 - 5 L A METALLURGICAL LITERATURE CLASSIFICATION

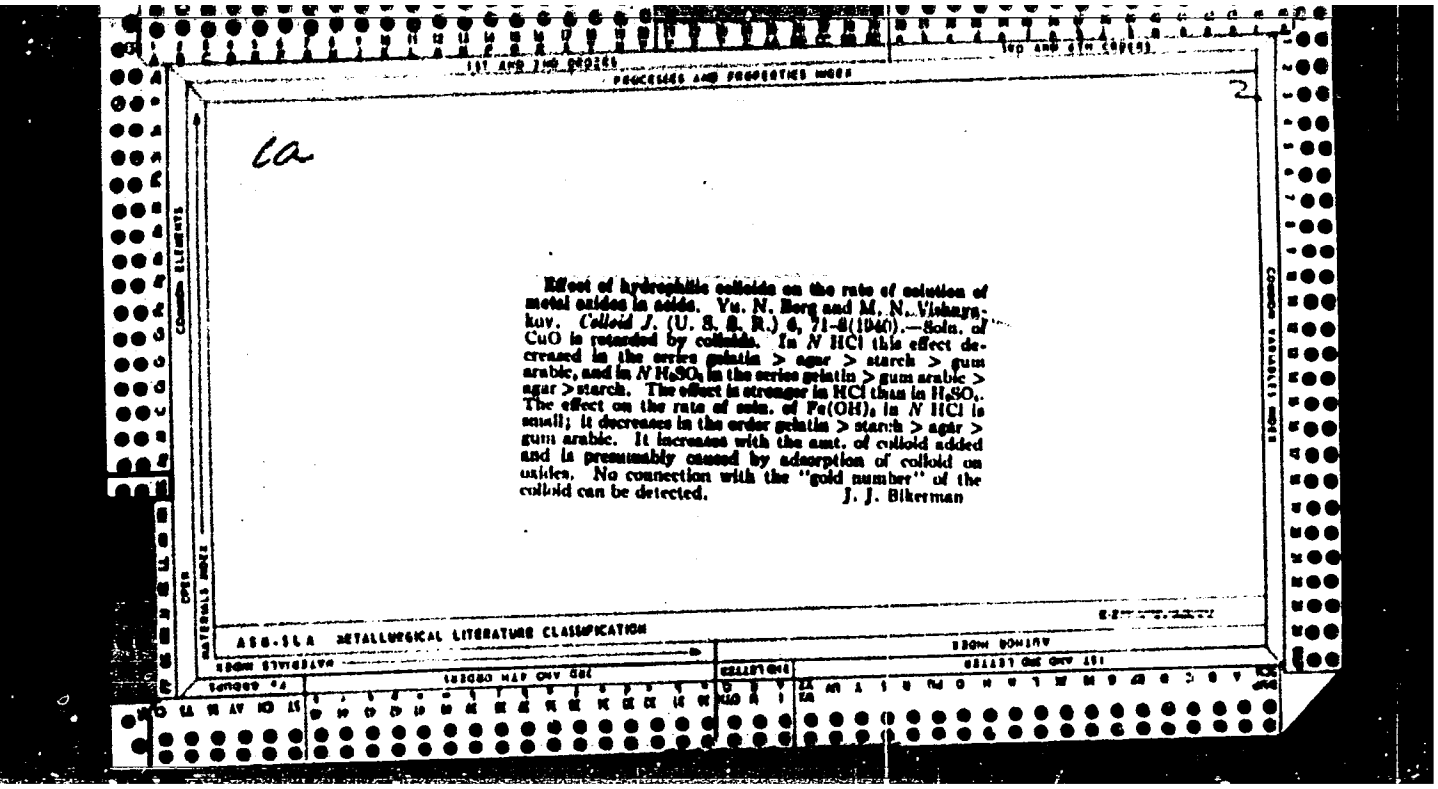


The reaction between magnesium and alcohols in the presence of some alkyl halides. M. N. Vishnyakov. *J. Gen. Chem.* (U. S. S. R.) **6**, 107-28(1936).—It has been established that Mg reacts with alcs. only when other substances which activate this reaction are present. Some observations on the org. halides (RX) as activators were made by Zal'kind (*J. Russ. Phys.-Chem. Soc.* **38**, 000) and a more detailed study of this field is now presented. Characteristic velocity changes occurring during the course of the reaction, noted by Zal'kind (unpublished observation), have now been more closely examd. The alcs. studied were MeOH, EtOH, PrOH; the activators, MeI, EtI, EtBr, $(CH_2Br)_2$, $MeCHBrCH_2Br$, $CHCl_3$, PrCl, PrBr, PrI. The comparative expts. were carried out at room temp. The reaction velocity was followed by measuring the gaseous products at frequent intervals. Mech. rocking was used, always at the same rate (115-20 times/min.). Usually 50 cc. of the alc. (dried over lime) was treated with 0.6 g. Mg powder. When the reaction proceeded to completion the quantity of gas formed was proportional to the wt. of Mg taken, and not to the wt. of activator. The 1st portions of gas were rich in hydrocarbon, while the last were almost pure H_2. The total gas formed corresponded closely to the equation: $2ROH + Mg \rightarrow Mg(OR)_2 + H_2$. No alcoholate was actually isolated, but a solid product was obtained which gave the theoretical amt. of alc. on heating with H_2O. The hydrocarbon probably arises thus: $RX + Mg \rightarrow RMgX$; $RMgX + R'OH \rightarrow R'OMgX + RH$. When preformed $R'OMgX$ was added at the beginning no hydrocarbon was evolved. RMgX was also detected by the formation of X on addn. of concd. H_2SO_4. $(RO)_2Mg$ is therefore the product of a secondary reaction catalyzed by RMgX, or even more effectively by preformed $R'OMgX$, which is probably the true activator because addn. of fresh Mg and alc. at the end of the reaction results in the formation of more H_2 and $(RO)_2Mg$. With small amts. of RX the reaction starts only after an induction period, with relatively larger amts. of Mg and RX the reaction begins quickly and exhibits a velocity max. during its course. There is a concn. threshold for each RX below which no reaction occurs at room temp. The decreasing order of reactivity of alcs. was EtOH, PrOH, MeOH and the decreasing order of activity of RX was RI, RBr, RCl. Increasing the length of the C chain in RX decreases the activity and introduction of a 2nd X atom increases it. To explain the role of $R'OMgX$, an unstable intermediate $R'(MgX)O\ldots(R'HO\ldots Mg\ldots(R'HO$ is postulated which decomposes to give $R'OMgX$, $2(R'O)_2Mg$ and H_2. The initial formation of $R'OMgX$ is accompanied by the liberation of much energy, part of which appears as heat, while another part serves as activating energy for the reaction leading to $(R'O)_2Mg$ and H_2. With large quantities of Mg this initial reaction is rapid and significant amts. of H_2 are found in the 1st portions of gas. This reaction "flash" terminates after about 10 min. when most of the



RMgX has disappeared. After the 1st sharp velocity max., the remaining RX continues to react with Mg, but more slowly. The R'OMgX conen gradually increases, the reaction of R'OH with Mg is catalyzed, and the observed velocity curve passes through a 2nd less sharp max. Sometimes a sharp but less pronounced max was observed between the 2 maxima described, but this is called "accidental" by V., having no significance related to the reaction mechanism. Curves and tables are given for many of the possible combinations of particular RX and R'OH.

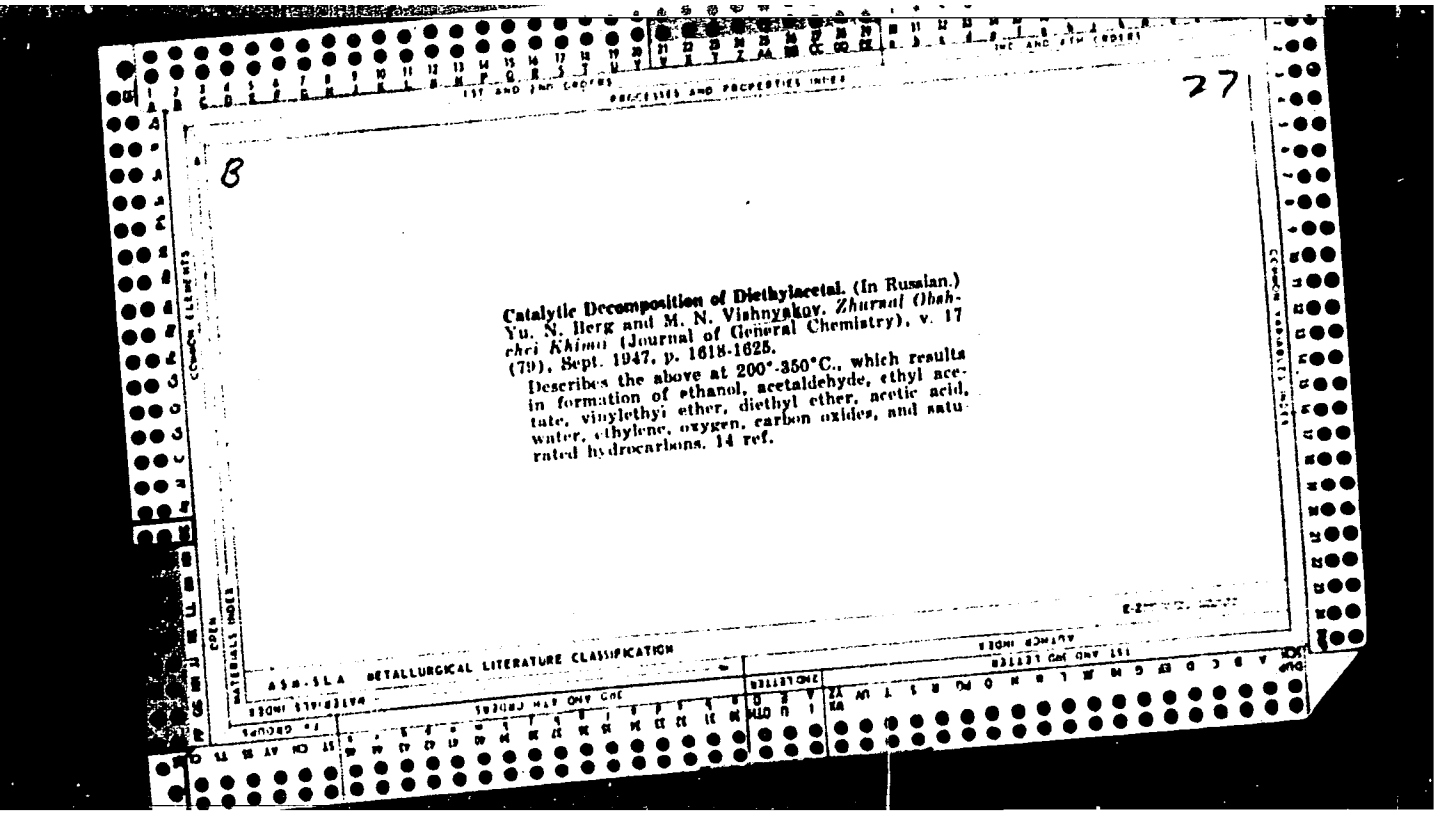
Lewis W. Butz



1a

2

Effect of hydrophilic colloids on the rate of solution of metal oxides in acids. Yu. N. Borg and M. N. Vishnyakov. *Colloid J.* (U. S. S. R.) 6, 71–8(1940).—Soln. of CuO is retarded by colloids. In *N* HCl this effect decreased in the order gelatin > agar > starch > gum arabic, and in *N* H_2SO_4 in the series gelatin > gum arabic > agar > starch. The effect is stronger in HCl than in H_2SO_4. The effect on the rate of soln. of $Fe(OH)_3$ in *N* HCl is small; it decreases in the order gelatin > starch > agar > gum arabic. It increases with the amt. of colloid added and is presumably caused by adsorption of colloid on oxides. No connection with the "gold number" of the colloid can be detected. J. J. Bikerman



B

27

Catalytic Decomposition of Diethylacetal. (In Russian.) Yu. N. Berg and M. N. Vishnyakov. *Zhurnal Obshchei Khimii* (Journal of General Chemistry), v. 17 (79), Sept. 1947, p. 1618-1625.

Describes the above at 200°-350°C., which results in formation of ethanol, acetaldehyde, ethyl acetate, vinylethyl ether, diethyl ether, acetic acid, water, ethylene, oxygen, carbon oxides, and saturated hydrocarbons. 14 ref.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VISHNYAKOV, N.K.

Fattening and raising cattle for meat in the Altai. Zhivotnovodstvo 23 no.5:32-37 My '61. (MIRA 16:2)

1. Zaveduyushchiy otdelom zhivotnovodstva Altayskogo nauchno-issledovatel'skogo instituta sel'skogo khozyaystva.
(Altai Territory--Beef cattle)

VISHNYAKOV, N. K.

Agriculture-Tannu-Tuva

Detached from production demands ("Vegetation of Tuva." K. A. Sobolevskaya. Reviewed by N. K. Vishnyakov, A. A. Lysenkov). Korm. baza 3 no. 3, '52

Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified.

VISHNYAKOV, N.K.; YANCHILIN, L.V. Prinimali uchastiye: ABRAMOCHKIN, V.A.; GUSEV, R.G.; IVANOV, P., red.; IELOVA, N., tekhn.red.

[Livestock feeding in the row crop system of agriculture] Kormlenie zhivotnykh pri propashnoi sisteme zemledeliia. Moskva, Sel'khozizdat, 1963. 133 p. (MIRA 16:8)

1. Nauchnye sotrudniki Altayskogo nauchno-issledovatel'skogo instituta sel'skogo khozyaystva (for Vishnyakov, Yanchilin, Abramochkin, Gusev).
(Feeding) (Feeds)

YEGOROV, Leonid Andrianovich, kand.tekhn.nauk; ROZANOV, Vladimir Grigor'yevich, kand.tekhn.nauk; VISHNYAKOV, N.N., kand.tekhn. nauk, retsenzent; LUBENETS, V.D., kand.tekhn.nauk, red.; LEZHNEVA, Ye.I., red.izd-va; EL'KIND, V.D., tekhn.red.

[Piston-type air compressors for motor vehicles; theory, design, construction, and testing] Avtomobil'nye porshnevye kompressory; teoriia, konstruktsiia, raschet i ispytaniia. Moskva, Gos. nauchno-tekhn.izd.mashinostroit.lit-ry, 1958. 235 p. (MIRA 12:2)
(Automobiles--Brakes) (Air compressors)

VISHNYAKOV, N. N.

VISHNYAKOV, N. N. -- "Investigation of the Subsequent Action of Pneumatic Braking Drive Gears." Sub 8 Dec 52, Military Order of Lenin Academy of Armored and Mechanized Troops of the Soviet Army imeni I.V. Stalin. (Dissertation for the Degree of Candidate in Technical Sciences.)

SO: VECHERNAYA MOSKVA, January-December 1952

VISHNYAKOV, Nikolay Nikolayevich; MASHCHENKO, A.F., red.; GALAKTIONOVA, Ye.N., tekhn.red.

[Adjustment of the IaAZ three-axle motortrucks] Regulirovka trekhosnykh avtomobilei IaAZ. Moskva, Nauchno-tekhn.izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1960. 55 p. (MIRA 13:10)

(Motortrucks)

PHASE I BOOK EXPLOITATION SOV/5458

Girshovich, Naum Grigor'yevich, Doctor of Technical Sciences, Professor, ed.

Spravochnik po chugunnomu lit'yu (Handbook on Iron Castings) 2d ed., rev. and enl. Moscow, Mashgiz, 1961. 800 p. Errata slip inserted. 16,000 copies printed.

Reviewer: P. P. Berg, Doctor of Technical Sciences, Professor; Ed.: I. A. Baranov, Engineer; Ed. of Publishing House: T. L. Leykina; Tech. Eds.: O. V. Speranskaya and P. S. Frumkin; Managing Ed. for Literature on Machine-Building Technology (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This handbook is intended for technical personnel at cast-iron foundries. It may also be of use to skilled workmen in foundries and students specializing in founding.

COVERAGE: The handbook contains information on basic problems in the modern manufacture of iron castings. The following are discussed: the composition and properties of the metal; the making of molds; special casting methods; the charge preparation; melting

Card 1/11

and modifying the cast iron; pouring, shaking out, and cleaning of castings; heat-treatment methods; and the inspection and rejection of castings. Information on foundry equipment and on the mechanization of castings production is also presented. The authors thank Professor P. P. Berg, Doctor of Technical Sciences, and staff members of the Mosstankolit Plant, headed by the chief metallurgist G. I. Kletskin, Candidate of Technical Sciences, for their assistance. References follow each chapter. There are 287 references, mostly Soviet.

TABLE OF CONTENTS:

VISHNYAKOV, N. V.

BELOGAY, V.M.

25(1) p.3 PHASE I BOOK EXPLOITATION SOV/1440

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Leningradskoye oblastnoye pravleniye

Lit'ye povyshennoy tochnosti (High-precision Casting) Moscow, Mashgiz, 1958. 196 p. (Series: Its: Sbornik, kn.45) 7,000 copies printed.

Ed.: A.N. Sokolov; Tech. Ed.: L.V. Sokolova; Managing Ed. for Literature on Machine-building Technology (Leningrad Division, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This book is intended for engineers and technicians at foundries and planning and research institutes.

COVERAGE: The book contains the transactions of a special conference called in November, 1956, by the Leningrad Oblast Administration of the Nauchno-tekhnicheskoye obshchestvo NTO (Scientific and Technical Society of the Machine-building Industry). The articles describe advanced techniques used in

Card 1/3

High-precision Casting SOV/1440

AVAILABLE: Library of Congress

GO/rj
5-5-59

Card 3/3

SOV/137-57-1-745

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 96 (USSR)

AUTHOR: Vishnyakov, N. V.

TITLE: Increasing the Productivity of Labor in the Manufacture of Sand Molds (Povysheniye proizvoditel'nosti truda pri izgotovlenii peschanykh form)

PERIODICAL: V sb.: Povysheniye proizvoditel'nosti truda v liteynom proiz-ve, Moscow-Leningrad, Mashgiz, 1955, pp 79-80

ABSTRACT: The following measures are essential to increase the productivity of labor in the manufacture of sand molds: Mechanization of ramming the sand and, particularly, integral mechanization of the entire technological process; adoption of production-line techniques and methods of coordinated shop operations; mechanization of transportation of mold mixtures to various consumer stations adoption of a standard mold mixture; standardization of flasks, grades of alloys, etc.; proper organization of operating stations; improvement of the machinability of cast components, etc.

Ya. M.

Card 1/1

VISHNYAKOV, N.V.

Increasing the precision of castings made in sand molds. [Izd.] (MIRA 11:6)
LONITOMASH 45:190-197 '58.
(Founding)

VISHNYAKOV, Pavel

Artistic photography in the service of peace and friendship. Sov. foto 20 no.6:1 Je '60. (MIRA 13:7)

1. Redaktor zhurnala "V zashchitu mira".
(Photography)

RYZHOV, E.V., kand.tekhn.nauk, dotsent; VISHNYAKOV, P.A., kand.tekhn.nauk

Determination of the dimensional wear of cutting tools working with heavy feeds. Vest.mashinostr. 43 no.9:69-70 S '63. (MIRA 16:10)

RYZOV, E.V., kand.tekhn.nauk, dotsent; VISHNYAKOV, P.A., kand.tekhn.nauk

Dimensional wear of hard-alloy cutting tools. Vest.mash. 42 no.3:77-79 Mr '62. (MIRA 15:3)
(Metal-cutting tools--Testing)

VISHNYAKOV, P. A., Cand Tech Sci -- (diss) "Research into some constructions of hard-alloyed drills in drilling of construction steels and cast iron." Moscow, 1960. 15 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Automechanics Inst); number of copies not given; price not given; (KL, 22-60, 136)

RYZHOV, E. V., kand. tekhn. nauk, dotsent; VISHNYAKOV, P. A., kand. tekhn. nauk

Temperature deformations of hard-alloy cutting tools. Vest. mashinostr. 42 no.12:63-65 D '62. (MIRA 16:1)

(Metal-cutting tools)
(Thermal stresses)

SHEVCHENKO, N.A.; VISHNYAKOV, P.A.

Dynamic study of the design of hard-alloy twist drills used in steel machining. Nauch.dokl.vys.shkoly; mash. i prib. no.1:192-199 '59. (MIRA 12:8)

1. Stat'ya predstavlena kafedroy "Metallorezhushchiye stanki i instrumenty" Bryanskogo instituta transportnogo mashinostroyeniya.
(Twist drills)

VISHNYAKOV, P.M.; TOLMACHEV, I.P., red.

[Production of butter in Vologda Province by the continuous process] Proizvodstvo vologodskogo masla na potochnoi linii; iz opyta raboty Krasnosukhonskogo maslozavoda Vologodskogo sovnarkhoza. Vologda, Vologodskoe knizhnoe izd-vo, 1959. 14 p. (MIRA 13:12)

(Vologda Province--Butter)

VISHNYAKOV, P.T., inzh.

Construction of subway tunnels by mechanized shields without preliminary forcing. Transp. stroi. 14 no.6:47-48 Je '64.
(MIRA 18:2)

VISHNYAKOV, P. T., inzh.; PYZHOV, M. A., inzh.; KHOMENKO, O. Ye., inzh.

Continuous organization of work in the construction of tunnels. Transpstroi 13 no. 11:23-26 N '63. (MIRA 17:5)

VISHNYAKOV, P.T., inzh.; KHOMENKO, O.Ye., inzh.

Decrease in the cross section of subway tunnels as a factor in the lowering of their cost. Trans. stroi. 13 no.8:51 Ag '63. (MIRA 17:2)

1. Stroitel'stvo Kiyevskogo metropolitena.

L 55906-65

ACCESSION NR: AP5012338 UR/0298/65/000/001/0047/0051

AUTHOR: Vishnyakov, R. D.

TITLE: A case of transient process analysis in thyratron circuits

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 1, 1965, 47-51

TOPIC TAGS: thyratron circuit analysis, thyratron circuit transient behavior,

ABSTRACT: Experiments carried out by the author showed that one can achieve an accurate theoretical calculation of the behavior of thyratron-containing circuits only if one takes into account peculiarities of the thyratron operation.

Card 1/2

L 55906-65
ACCESSION NR: AP5012338

ting subinterval; during each such subinterval one has to adjust the coefficients

ASSOCIATION: Sibirskiy nauchno-issledovatel'skiy institut energetiki, Novosi-

Card 2/2

KHERUVIMOV, V.; VISHNYAKOV, N., kand. veterin. nauk

Method for treating dyspepsia of calves. NTO 6 no.3:21 Mr '64. (MIRA 17:6)

1. Predsedatel' soveta Nauchno-tekhnicheskogo obshcheatva Kurskoy veterinarnoy laboratorii, zaveduyushchiy otdelom biokhimii Kurskoy veterinarnoy laboratorii (for Kheruvimov). 2. Zaveduyushchiy kafedroy veterinarii i biokhimii Kurskogo sel'skokhozyaystvennogo instituta (for Vishnyakov).

VISHNYAKOV, B.N.; DOVZHENKO, Ya.A.; LYSHNKINA, D.S.; SYRKIN, Ya.M.

New cements for wells with high bottom temperatures. Neft. i gaz. prom. no.4:20-23 O-D '63. (MIRA 17:12)

1. Gosudarstvennyy institut po proyektirovaniyu tsementnykh zavodov v yuzhnykh rayonakh SSSR.

Raw Materials Minerals

BCJ

1110. Genetical types of dolomite rocks.—S. G. VISHNYAKOV (*Dok. Akad. Nauk.*, U.S.S.R., 76, 111, 1951). Epigenetical dolomitization has been going on since the Quaternary time and is probably taking place now. It is logical to assume that conditions are created in nature which promote metasomatism and, owing to adsorption, an increased concn. of Mg cpds. is formed on the reactive calcite surface. This makes it possible for the Mg ion to react with the molecule $CaCO_3$ to form dolomite. The main source of Mg for the epigenetic dolomitization is protogenic and diagenetic rocks from which Mg is supplied in the form of bicarbonates. All 3 genetic types of dolomite are closely connected and form various transitory calcareous dolomite and dolomitic-lime rocks.

VISHNYAKOV, S. G.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Mineralogical and Geological Chemistry

2
(1)

Siliceous formations in carbonate rocks of the lower and middle Carboniferous of the northwestern side of the basin near Moscow. S. G. Vishnyakov. *Izvest. Akad. Nauk S.S.S.R., Ser. Geol.* 1953, No. 4, 80–90.—A consideration of the mineralogical compn., structure, time, and conditions of formation of silicon in limestones of the Carboniferous. Some photomicrographs and chem. analysis data are given.
Gladys S. Macy

Vishnyakov

History of the aluminum minerals in bauxitic rocks. B. G. Vishnyakov (State Univ., Voronezh.). *Doklady Akad. Nauk S.S.S.R.* 88, 543-6(1953).—Bauxite-forming Al minerals are considered as part of a genetic series in which each mineral arises from the previous one in regular order as a result of the historical course of geol. processes. Such a series is: (1) alumina gel ($Al_2O_3.nH_2O$, called "alumomutabillite") rapidly changing into "alumometastabillite," (2) colloidal alumina, hydrated but not in stoichiometric proportions, (3) the mineral gibbsite ($Al_2O_3.3H_2O$) which then goes through various stages of dehydration and recrystn. (boehmite, diaspore, corundum). Russian deposits of bauxite of Mesozoic, Carboniferous, Devonian, and Silurian ages as well as metamorphosed diaspore-corundum-sillimanite deposits in Middle Asia and in the Greek Island of Naxos, follow the above scheme, as does also the original bauxite deposit in Beaux, France, and the Ayrshire (Scotland) deposit of bauxitic clay. V. H. Gottschalk

62

VISHNYAKOV, S.G.

Possibility of using brecciated minerals for clarification of the periodicity and evolution of sedimentary bed accumulation. Dokl. AN SSSR 93 no.6:1099-1102 D '53. (MLRA 6:12)

1. Voronezhskiy gosudarstvennyy universitet. Predstavleno akademikom D.S.Belyankinym.

(Breccia) (Sedimentation and deposition)

VISHNYAKOV, S.G., prof., otv. red.; GRISHCHENKO, M.N., prof., red.; DMITRIYEVSKIY, V.S., dots., red.; LARIONOV, A.K., prof., red.; PLAKSENKO, N.A., dots., red.; TOCHILIN, M.S., prof., red.; PREOBRAZHENSKAYA, V.N., dots., red.; KHOZYAINOV, N.P., dots., red.

[Geology and minerals of central Chernozem provinces; transactions] Geologiia i poleznye iskopaemye TSentral'no-Chernozemnykh oblastei; trudy. Voronezh, Izd-vo Voronezhskogo univ., 1964. 334 p. (MIRA 18:2)

1. Mezhoblastnoye geologicheskoye soveshchaniye po geologii i mineral'nym resursam tsentral'nochernozemnykh oblastey, Voronezh, 1962. 2. Voronezhskiy lesotekhnicheskiy institut (for Grishchenko). 3. Voronezhskiy gosudarstvennyy universitet (for Preobrazhenskaya).

VISHNYAKOV, S.G.

Weathering surface on Devonian clays in the Tikhvin bauxite-bearing region. Kora vyvetr. no.5:257-268 '63.
(MIRA 16:7)

1. Voronezhskiy gosudarstvennyy universitet.
(Tikhvin region—Weathering)
(Tikhvin region—Bauxite)

BOGUNOVA, L.S.; VISHNYAKOV, S.G.; KHOZHAINOV, N.P.

Stratigraphy of Carboniferous sediments in the Kursk Magnetic Anomaly. Mat.po geol.i pol.iskop.tsentr.raion.evrop.chasti SSSR no.5:75-82 '62. (MIRA 16:6)
(Kursk Magnetic Anomaly—Geology, Stratigraphic)